
NATIONAL CENTER FOR EDUCATION STATISTICS

Statistical Analysis Report

August 1992

National Education Longitudinal Study of 1988

Characteristics of At-Risk Students in NELS:88

Contractor Report

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Foreword

The National Education Longitudinal Study of 1988 (NELS:88) is a **large-scale**, national longitudinal study designed and sponsored by the National Center for Education Statistics (NCES), with support from other government **agencies**. Beginning in the spring of **1988** with a cohort of eighth graders (**25,000**) attending public and private schools across the **nation**, these same individuals were **re-surveyed** in **1990**. During the **base-year**, data were also collected from **students' parents, teachers, and school principals**. Taken **together**, the base-year and follow-up data of **NELS:88** provide a wealth of information about eighth graders (**1988 school year**) as they move both in and out of the **U.S.** school system and into the many and varied activities of early **adolescence**.

This study examines the characteristics of eighth-grade students who were at risk of school failure (i.e., low achievement test scores and dropping out of **school**). Seven sets of variables were **examined**: 1) basic demographic **characteristics**; 2) family and personal background **characteristics**; 3) the amount of parental involvement in the student's **education**; 4) the student's academic **history**; 5) student behavioral **factors**; 6) teacher perceptions of the **student**; and 7) the characteristics of the student's **school**.

In this **study**, many factors were found to predict at-risk status that were independent of the student's **sex, race–ethnicity, and socioeconomic background**. These findings should prove to be useful to researchers, **educators**, and **policymakers** who are interested in better understanding the many factors that can lead to school **failure**.

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This report was prepared under the direction of Jeffrey **Owings**, Chief, Longitudinal and Household Studies **Branch**, **Elementary/Secondary** Education Statistics **Division**. Many individuals made substantial contributions to the preparation of this **report**. William **Marellich** of **MPR** Associates provided programming assistance. In addition, Andrea **Livingston**, Leslie **Retallick**, Sharlene **Mulder**, Ramona **McCowan**, and Santosh **Seeram** of **MPR** Associates provided invaluable **editorial**, **graphics**, and production assistance.

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The report was reviewed by Jorge **del Pinal**, U.S. Bureau of the Census; Joseph **Hawkins**, Montgomery County Public Schools; Alan **Ginsburg**, U.S. Department of Education; and John **Grymes**, Samuel **Peng**, and Robert Burton of the National Center for Education Statistics. Their efforts and contributions are greatly appreciated.

Highlights

This report examines the characteristics of students in the eighth-grade cohort of 1988 who were at risk for school failure. Seven sets of variables were examined: 1) basic demographic characteristics; 2) family and personal background characteristics; 3) the amount of parental involvement in the student's education; 4) the student's academic history; 5) student behavioral factors; 6) teacher perceptions of the student; and 7) the characteristics of the student's school.

Three measures of school failure were used: 1) scores on achievement tests in mathematics; 2) scores on achievement tests in reading; and 3) dropout status as of spring 1990. About 19 percent of the eighth-grade class of 1988 were performing below the basic proficiency level in mathematics, while about 14 percent were performing below the basic proficiency level in reading. In addition, about 6 percent of the eighth-grade cohort of 1988 were dropouts in the spring of 1990.

Demographic variables

Three basic demographic variables were examined: the student's sex, race-ethnicity, and socioeconomic status.

- Black, Hispanic, and Native American students and students from low-socioeconomic backgrounds were more likely than other students to be deficient in basic mathematics and reading skills. These students were also more likely than other students to drop out between the 8th and 10th grades.
- Male eighth-graders were more likely than their female peers to have low basic skills, but were no more likely to drop out.
- After controlling for the student's sex and socioeconomic status, black and Hispanic dropout rates were no longer statistically different from white dropout rates.
- Even after controlling for the student's sex and socioeconomic status, black and Hispanic students were more likely than white students to perform below basic proficiency levels in mathematics and reading.

Effects of other characteristics after controlling for demographic characteristics

Many factors were found to predict at-risk status that were independent of the student's **sex**, **race–ethnicity**, and socioeconomic **background**. Controlling for basic demographic **characteristics**, the following groups of students were found to be more likely to have poor basic skills in the eighth grade and to have dropped out between the **8th** and the **10th grades**:

- Students from single-parent **families**, students who were overage for their peer **group**, or students who had frequently changed **schools**;
- Eighth-grade students whose parents were not actively involved in the student's **school**, students whose parents never talked to them about school-related **matters**, or students whose parents held low expectations for their child's future educational **attainment**;
- Students who repeated an earlier **grade**, students who had histories of poor grades in mathematics and **English**, or students who did little **homework**;
- Eighth-graders who often came to school unprepared for **classwork**, students who frequently cut **class**, or students who were otherwise frequently tardy or absent from **school**;
- Eighth-graders who teachers thought were **passive**, frequently **disruptive**, **inattentive**, or students who teachers thought were **underachievers**; and
- Students from urban schools or from schools with large minority **populations**.

Eighth-graders from schools that had a heavy emphasis on academics were less likely to have poor basic **skills**. **However**, students from these types of schools were no more or less likely to drop out than were students from schools which place less emphasis on **academics**.

Table of Contents

| Section | Page |
|---|------|
| Foreword | iii |
| Acknowledgments | iv |
| Highlights | v |
| List of Tables | ix |
| Chapters | |
| 1 Introduction | 1 |
| Definition of At-Risk Outcomes | 2 |
| Organization of This Report | 2 |
| 2 Demographic Background Factors | 5 |
| Results | 5 |
| Relative Risk | 6 |
| 3 Family and Personal Background Factors | 11 |
| Results: Univariate Odds Ratios | 11 |
| Results: Multivariate Odds Ratios | 13 |
| Summary | 15 |
| 4 Parental Involvement | 17 |
| Results: Univariate Odds Ratios | 17 |
| Results: Multivariate Odds Ratios | 20 |
| Summary | 22 |
| 5 Academic History and Characteristics | 23 |
| Results: Univariate Odds Ratios | 24 |
| Results: Multivariate Odds Ratios | 27 |
| Summary | 28 |
| 6 Student Behaviors | 31 |
| Results: Univariate Odds Ratios | 32 |
| Results: Multivariate Odds Ratios | 35 |
| Summary | 37 |
| 7 Teacher Perceptions | 39 |
| Results: Univariate Odds Ratios | 39 |
| Results: Multivariate Odds Ratios | 40 |
| Summary | 42 |

| Section | Page |
|---|------|
| 8 School Environment | |
| Results: Univariate Odds Ratios | 43 |
| Results: Multivariate Odds Ratios | 43 |
| Summary | 46 |
| | 49 |
| 9 Discussion | 51 |
| Appendices | |
| Appendix A: Data and Methodology | 53 |
| Appendix B: Sample Sizes, Percentage Tables, and Standard Error Tables | 63 |

List of Tables

| Table | | Page |
|--------------|---|-------------|
| 2.1 | Percentage of eighth-grade students in 1988 performing below basic levels of reading and mathematics and percentage dropping out of school, 1988 to 1990 , by basic demographics..... | 6 |
| 2.2 | Odds ratios of eighth-grade students in 1988 performing below basic levels of reading and mathematics in 1988 and dropping out of school, 1988 to 1990, by basic demographics | 7 |
| 2.3 | Adjusted odds ratios of eighth-grade students in 1988 performing below basic levels of reading and mathematics in 1988 and dropping out of school, 1988 to 1990 , by basic demographics | 8 |
| 3.1 | Odds ratios of eighth-grade students in 1988 performing below basic levels of reading and mathematics in 1988 and dropping out of school, 1988 to 1990 , by family background factors | 13 |
| 3.2 | Adjusted odds ratios of eighth-grade students in 1988 performing below basic levels of reading and mathematics in 1988 and dropping out of school, 1988 to 1990 , by family background factors | 15 |
| 4.1 | Odds ratios of eighth-grade students in 1988 performing below basic levels of reading and mathematics in 1988 and dropping out of school, 1988 to 1990 , by parental involvement..... | 19 |
| 4.2 | Adjusted odds ratios of eighth-grade students in 1988 performing below basic levels of reading and mathematics in 1988 and dropping out of school, 1988 to 1990 , by parental involvement..... | 21 |
| 5.1 | Odds ratios of eighth-grade students in 1988 performing below basic levels of reading and mathematics in 1988 and dropping out of school, 1988 to 1990 , by academic characteristics..... | 25 |
| 5.2 | Adjusted odds ratios of eighth-grade students in 1988 performing below basic levels of reading and mathematics in 1988 and dropping out of school, 1988 to 1990 , by academic characteristics..... | 29 |
| 6.1 | Odds ratios of eighth-grade students in 1988 performing below basic levels of reading and mathematics in 1988 and dropping out of school, 1988 to 1990 , by student behaviors..... | 34 |
| 6.2 | Adjusted odds ratios of eighth-grade students in 1988 performing below basic levels of reading and mathematics in 1988 and dropping out of school, 1988 to 1990 , by student behaviors | 36 |
| 7.1 | Odds ratios of eighth-grade students in 1988 performing below basic levels of reading and mathematics in 1988 and dropping out of school, 1988 to 1990 , by teacher perceptions..... | 40 |
| 7.2 | Adjusted odds ratios of eighth-grade students in 1988 performing below basic levels of reading and mathematics in 1988 and dropping out of school, 1988 to 1990 , by teacher perceptions..... | 42 |

| Table | Page |
|---|------|
| 8.1 Odds ratios of eighth-grade students in 1988 performing below basic levels of reading and mathematics in 1988 and dropping out of school, 1988 to 1990, by school environment..... | 45 |
| 8.2 Adjusted odds ratios of eighth-grade students in 1988 performing below basic levels of reading and mathematics in 1988 and dropping out of school, 1988 to 1990, by school environment..... | 47 |

Appendix Tables

| | |
|--|----|
| A1 Percentage of all sampled students and students with parent data performing below basic levels of reading and mathematics in 1988 and dropping out of school, 1988 to 1990..... | 55 |
| A2 Outcome variables..... | 56 |
| A3 Composite and recoded variables | 57 |
| A4 Composite variables for school environment..... | 58 |
| | |
| B2.1 Sample sizes and standard errors for table 2.1..... | 65 |
| B2.2 Standard errors for table 2.2..... | 66 |
| B2.3 Standard errors for table 2.3..... | 66 |
| B3.1 Percentages upon which the odds ratios of tables 3.1 and 3.2 are based | 67 |
| B3.2 Sample sizes and standard errors for table B3.1..... | 68 |
| B3.3 Standard errors for table 3.1..... | 69 |
| B3.4 Standard errors for table 3.2..... | 70 |
| B4.1 Percentages upon which the odds ratios of tables 4.1 and 4.2 are based | 71 |
| B4.2 Sample sizes and standard errors for table B4.1..... | 72 |
| B4.3 Standard errors for table 4.1..... | 73 |
| B4.4 Standard errors for table 4.2 | 74 |
| B5.1 Percentages upon which the odds ratios of tables 5.1 and 5.2 are based | 75 |
| B5.2 Sample sizes and standard errors for table B5.1 | 77 |
| B5.3 Standard errors for table 5.1..... | 79 |
| B5.4 Standard errors for table 5.2..... | 81 |
| B6.1 Percentages upon which the odds ratios of tables 6.1 and 6.2 are based | 83 |
| B6.2 Sample sizes and standard errors for table B6.1..... | 85 |
| B6.3 Standard errors for table 6.1..... | 87 |
| B6.4 Standard errors for table 6.2..... | 88 |
| B7.1 Percentages upon which the odds ratios of tables 7.1 and 7.2 are based | 89 |
| B7.2 Sample sizes and standard errors for table B7.1..... | 90 |

| Table | | Page |
|--|-------|-------------|
| B7.3 Standard errors for table 7.1..... | | 91 |
| B7.4 Standard errors for table 7.2..... | | 92 |
| B8.1 Percentages upon which the odds ratios of tables 8.1 and 8.2 are based | | 93 |
| B8.2 Sample sizes and standard errors for table B8.1 | | 95 |
| B8.3 Standard errors for table 8.1..... | | 97 |
| B8.4 Standard errors for table 8.2..... | | 99 |

Chapter 1

Introduction

Research on the educationally disadvantaged provides a clear portrait of those likely to fail in elementary and secondary schools.¹ Students from low-socioeconomic backgrounds, from minority groups, or whose parents are not directly involved in their education, are at risk for educational failure—either by failing to learn while in school or by dropping out of school altogether. Over the last decade there has been a growing realization that students from minority backgrounds, low-income families, or both—those students most likely to be “at risk”—are rapidly assuming an unprecedented share of the student population.² Current estimates of the proportion of American children who are at risk for school failure range from 10 percent to 25 percent, depending upon which indicators are used to define at-risk children. Pallas, Natriello, and McDill noted that 35 percent to 40 percent of American students read at levels below what is expected of children their age. These authors estimated the at-risk population to be 33 percent of the total school population—and they believed their estimate to be conservative. Due to projected increases in the proportion of American schoolchildren from minority families, especially families of Hispanic origin, Pallas and his colleagues expect the problem of school failure to increase substantially between now and the year 2020 unless significant improvements occur in the lives and education of poor and minority children.

A central task of the research community is to identify those factors that lead students to be at risk and to identify which school-based interventions are effective in dealing with at-risk students.³ Educators and policymakers agree that failure to adequately prepare for the growing numbers of at-risk students may leave the nation with severe educational problems that could ultimately threaten our social and economic stability.

This report presents the results of an analysis of the academic performance and dropout status of at-risk eighth-grade students in the National Education Longitudinal Study of 1988 (NELS:88). The purpose of this report is two-fold. The first goal is to examine factors thought to be associated with school failure and highlight the relative risk that they pose to students' educational outcomes. The second objective of this report is to highlight the range of variables in the NELS:88 data set that can be used to explore the issues surrounding the education of at-risk students. To this end, this report presents a wide range of factors thought to be associated with school failure. Three educational outcomes are examined: scores on achievement tests in mathematics, scores on achievement tests in reading, and actual dropout status as of the 10th grade.

¹ For a brief review of the research literature on education for the disadvantaged, see J. Ralph, “Improving Education for the Disadvantaged Do We Know Whom to Help?” *Kappan* (January 1989).

² A. Pallas, G. Natriello, and E. McDill, “The Changing Nature of the Disadvantaged Population: Current Dimensions and Future Trends,” *Educational Researcher* (June-July 1989).

³ For a discussion of programs for at-risk students, see R. Slavin, N. Karweit, and N. Madden, Center for Research on Elementary and Middle Schools, *Effective Programs for Students At-Risk*. (Baltimore: The Johns Hopkins University, 1989); G. Wehlage and G. Smith, National Center For Effective Secondary Schools, *Programs for At-Risk Students: A Research Agenda* (1986).

Definition of At-Risk Outcomes

An “at-risk” student is generally defined as a student who is likely to fail at **school**. In this **context**, school failure is typically seen as dropping out of school before high school **graduation**. As a **result**, the characteristics of at-risk students have traditionally been identified through retrospective examinations of high school dropouts’ **family** and school **histories**. Those characteristics associated with dropping out of school then become the defining characteristics of at-risk **students**.

However, defining school failure solely on the basis of a student’s dropout status **may be** too **restrictive**. Students who fail to achieve basic skills before leaving school may also be at risk of school **failure**. Thus, this report expands the notion of “**at risk**” to include failure to achieve basic levels of proficiency in key subjects (**mathematics** and **reading**).

In this **report, therefore**, students are considered at risk of school failure **if**, in the eighth **grade**, they had failed to achieve basic proficiency in mathematics or **reading**, or had dropped out of school **altogether**. While some proportion of these students may eventually graduate high school with adequate literary and **numeracy** skills, their academic **performance** in the eighth grade has put them at risk of school **failure**.

The mathematics and reading tests taken by the students in the **NELS:88** Base Year Survey were designed so that the test **results**, in addition to being reported as simple **numbers**, were also reported as performance **levels**.⁴ For the mathematics **test**, students could score within four possible performance **levels**: **advanced**, **intermediate**, **basic**, or **below basic**. Students performing below the basic math level could not perform arithmetic operations (**addition**, **subtraction**, **multiplication**, and **division**) on whole **numbers**. For the reading comprehension **test**, students could score within three possible performance **levels**: **advanced**, **basic**, or **below basic**. Students **performing** below the basic reading level could not recall details and identify the author’s main **thought**. Data are also available in **NELS:88** on the number of students who dropped out between the spring of 1988 and of 1990 (the time of the first follow-up **survey**).⁵

Organization of This Report

This report contains eight **sections**. The seven chapters that follow this introduction are organized around sets of variables that represent seven distinct conceptual **factors**, purported to be related to **students’** at-risk status. These factors **include**: student demographic **background**, family **background**, parental **involvement**, student academic **history**, student **behavior**, teachers’ perceptions of the **student**, and school **characteristics**. While these seven groups of factors **form a** conceptual framework describing the process of eighth-grade school **failure**, the primary focus of this report is descriptive and does not provide a formal test of this **model**.

⁴The achievement tests were developed by the Educational Testing Service (ETS) specifically for the **NELS:88** survey. The **ETS report**, *Psychometric Report for the NELS:88 Base Year Test Battery* (1989), discusses the properties of the test battery and item **reliabilities**; this report can be obtained from **NCES**.

⁵“**Dropping out**” is defined in this report as a **status**. Students were counted as dropouts if they were **in school** in the spring of 1988, but were not in school in the spring of 1990. By **this definition**, students were not included as dropouts if they dropped out of school during this time period but returned to school by the spring of 1990. Rather than using a **status definition**, dropping out could also have been defined as **an “event,”** in which **all** students who had dropped out of school between the **8th** and **10th** grades would be counted **as dropouts**, regardless of whether or not they returned to school by the time of the first follow-up **survey**. By this **event definition**, about **6.7** percent of the eighth-grade **class** of 1988 **dropped out**. This analysis presented in this report was also **run** with **an** **event**

Three kinds of statistics are presented in this report: 1) percentages of students with various characteristics who perform below basic proficiency levels and who drop out of school; 2) simple odds ratios for the three outcome measures for students with different characteristics; and 3) odds ratios for these outcome measures adjusted for sex, race–ethnicity, and socioeconomic status (SES). The first kind of statistic, simple percentages, are presented only in chapter 2, providing a context for interpreting the odds ratios presented in subsequent chapters. A brief description of odds ratios is also presented in chapter 2. Finally, chapters 3 through 8 present the simple and adjusted odds ratios; the simple percentage tables for these chapters are included in appendix B.⁶

definition of dropping out. There were no substantial differences in the results from these presented here.

⁶Because many of the variables examined come from parent rather than student survey items (for example, number of older sibling dropouts, parent-student discussion of particular topics, some indices of the student's educational history, and so on), the estimates in chapters 3 through 8 have been generated with a slightly smaller number of students than those in chapter 2. While chapter 2 presents data for all students in NELS:88, the later chapters restrict the sample to only those students for whom parent data were available. For math proficiency, the sample was reduced from 21,908 to 19,878 students; for reading proficiency, the sample was reduced from 22,676 to 20,576 students. When creating estimates for dropout status, the sample decreased by 1,096 students, dropping from 17,424 to 16,328 students. The bias introduced by these reductions is slight; for more information, see appendix A.

Chapter 2

Demographic Background Factors

Many previous studies have found a **student's** socioeconomic status (**SES**) to be an important **element of at-risk status**. Whether measured by parents' **occupation**, educational **attainment**, or family income, or by a more complex **index**, students from lower **SES** families are more **likely to experience school failure** than those from higher **SES families**.⁷ It appears that Hispanics who **leave school** before graduating generally do so earlier than black and white **students**, who tend to **leave during** the last two years of high school.⁸ This fact has significant impact on researchers' understanding of the at-risk **phenomenon**, because most longitudinal research to date has focused on the high school **years**, and it is quite possible that significant numbers of **at-risk** Hispanic students have not been included in these **analyses**. The following section **examines** three demographic background factors—socioeconomic status, race—ethnicity, and sex—and their relationship to at-risk status.

Results

Overall, about 19 percent of eighth graders in the class of 1988 performed below the basic level of proficiency in **mathematics**, and about 14 percent were below basic proficiency in reading (table 2.1). In addition, approximately 6 percent of the eighth-grade class of 1988 had dropped out of school by the 10th grade.⁹ Compared with other **students**, a larger percentage of male **students**, of black, Hispanic, or Native American **students**, and of students from low-socioeconomic backgrounds were deficient in basic **skills**. A larger proportion of black, Hispanic, or Native American **students** and low-SES **students** were also **dropouts**.

⁷R.B. Cairns, B.C. Cairns, and H.J. Neckerman, "Early School Dropout: Configurations and Determinants," *Child Development* 60 (1989):1437-1452; R.B. Ekstrom, M.E. Goertz, J.M. Pollack, and D.A. Rock, "Who Drops Out of High School and Why? Findings from a National Study," in *School Dropouts: Patterns and Policies*, ed. G. Natriello (New York: Teachers College Press, 1989): 52-69; R.W. Rumberger, "High School Dropouts: A Review of Issues and Evidence," *Review of Educational Research* 57 (1987):101-121.

⁸R. Tidwell, "Dropouts Speak Out: Qualitative Data on Early School Departures," *Adolescence* 23 (1988): 939-954.

⁹During the base-year survey of **NELS:88**, 5.4 percent of students were excluded from the sample because they were **identified** as **being** unable to complete the questionnaire owing to limitations in their language proficiency or their mental or physical **disabilities**. The dropout rates reported here are based solely on the sample of base-year eligible **students**. These rates are somewhat lower than those reported in P. Kaufman, M. McMillen, and S. Whitener, *Dropout Rates in the United States: 1990* (September 1991), which were based on estimates from both the eligible and ineligible **students**.

Table 2.1—Percentage of eighth-grade students in 1988 performing below basic levels of reading and mathematics and percentage dropping out of school, 1988 to 1990, by basic demographics

| Variable | Below basic mathematics | Below basic reading | Dropped out |
|------------------------|-------------------------|---------------------|-------------|
| Total | 18.8 | 13.7 | 6.0 |
| sex | | | |
| Male | 20.4 | 15.5 | 6.2 |
| Female | 17.2 | 11.8 | 5.8 |
| Race–ethnicity† | | | |
| Asian | 13.0 | 14.1 | 2.8 |
| Hispanic | 27.6 | 21.0 | 9.1 |
| Black | 28.9 | 23.4 | 10.0 |
| white | 15.4 | 10.4 | 4.8 |
| Native American | 30.7 | 28.9 | 11.1 |
| Socioeconomic status | | | |
| Low | 29.7 | 22.6 | 14.5 |
| Middle | 21.5 | 14.7 | 4.6 |
| High | 12.1 | 8.8 | 2.6 |

† Not shown separately are persons whose race–ethnicity is unknown (approximately 2 percent of the unweighted sample).

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988 (NELS:88), "Base Year and First Follow-Up" surveys.

Relative Risk

In order to examine the relative disadvantage of **males, blacks, Hispanics, Native Americans, and low-SES** students on these **measures**, table 2.2 presents the odds ratios of students **performing** below the basic mathematics and reading levels and of students dropping out of school **among** students with different background **characteristics**. For **example**, the odds that a Hispanic student dropped out were approximately 1 in 10 or 0.100, and the odds that a white student dropped out were approximately 1 in 20 or 0.050.¹⁰ The odds ratio comparing Hispanics with whites was **0.100/0.050**, or approximately **2.01**, indicating that being Hispanic rather than white increased by a factor of **2.01** the odds of an eighth grader in **1988** dropping out by **1990**. In other words, Hispanic students were twice as likely to drop out as were white students.¹¹

¹⁰These odds can be calculated from the **percentages** in table 2.1. The odds that a Hispanic student **dropped** out was $9.1/[100-9.1]=0.100$, while the odds that a white student dropped out was $4.8/[100-4.8]=0.050$.

¹¹The percentage of Hispanic and Asian students performing below basic levels in mathematics and reading and the **percentage** dropping out between the **8th** and **10th** grades may be underestimated due to the fact that many students with language difficulties were systematically excluded from the sample of students in **NELS:88**.

It is **important** for the reader to keep in mind that the odds ratios **presented** in this report are not equivalent to the ratio of **percentages**. For **example**, the percentage of Hispanic students dropping out was **9.1 percent**, while the percentage of white students dropping out was **4.8 percent**. The ratio of the percentage of Hispanic students to white students dropping out was **9.1/4.8 or 1.90**, while the odds ratio comparing Hispanics to whites was **2.01**. In terms of the **percentages, therefore**, Hispanics were **90** percent more likely than whites to drop **out**, while in terms of odds they were **101** percent more likely to drop **out**. In this report we use the terms **“more likely”** and **“less likely”** to refer to the change in the odds and not the change in **percentages**.

In terms of odds **ratios**, females were slightly less likely than males to have low mathematics and reading **skills**, but were equally likely to have dropped out of school (**table 2.2**). Native **American**, Hispanic and black students were about twice as likely as white students to have performed below basic skill levels in mathematics and reading in the **8th grade** and to have dropped out of school by the beginning of the **10th grade**. Students from low-socioeconomic backgrounds were about twice as likely as middle class students to perform below basic skill levels and were almost four times as likely to have dropped **out**.

Table 2.2—Odds ratios of eighth-grade students in 1988 performing below basic levels of reading and mathematics in 1988 and dropping out of school, 1988 to 1990, by basic demographics

| Variable | Below basic mathematics | Below basic reading | Dropped out |
|----------------------------------|-------------------------|---------------------|-------------|
| Sex | | | |
| Female vs. male | 0.81* | 0.73** | 0.92 |
| Race–ethnicity† | | | |
| Asian vs. white | 0.82 | 1.42** | 0.59 |
| Hispanic vs. white | 2.09** | 2.29** | 2.01** |
| Black vs. white | 2.23** | 2.64** | 2.23** |
| Native American vs. white | 2.43** | 3.50** | 2.50** |
| Socioeconomic status | | | |
| Low vs. middle | 1.90** | 1.91** | 3.95** |
| High vs. middle | 0.46** | 0.41** | 0.39* |

† Not shown separately are persons whose race–ethnicity is unknown (approximately 2 percent of the **unweighted sample**).

NOTE:* indicates that the odds compared with the reference group are statistically significant at **.05 level**; ** at **.01 level**.

SOURCE U.S. Department of Education, National Center for Education **Statistics**, National Education Longitudinal Study of 1988 (NELS:88), “**Base Year** and **First Follow-Up**” surveys.

However, it is well known that **race–ethnicity** and socioeconomic status are highly related and that students from minority backgrounds are also more likely to have low **SES**. Therefore, the increased likelihood of minority students being at risk may be due in part to their **low-SES** status and not their **race–ethnicity** per se. Table 2.3 presents odds ratios adjusted for socioeconomic status, **race–ethnicity**, and **sex**.¹² For example, when looking at dropout **status**, the adjusted odds ratio for the comparison of Hispanic versus white students is 1.12 and is no longer statistically **significant**. This adjusted figure indicates that when socioeconomic status and sex were held **constant**, in terms of **odds**, the likelihood of Hispanics dropping out was no greater than that of whites dropping out. That is, within levels of socioeconomic status and **sex**, Hispanics and whites dropped out at similar **rates**.

Table 2.3—Adjusted odds ratios¹ of eighth-grade students in 1988 performing below basic levels of reading and mathematics in 1988 and dropping out of school, 1988 to 1990, by basic demographics

| Variable | Below basic mathematics | Below basic reading | Dropped out |
|-----------------------------------|-------------------------|---------------------|-------------|
| Sex | | | |
| Female vs. male | 0.77** | 0.70** | 0.86 |
| Race–ethnicity² | | | |
| Asian vs. white | 0.84 | 1.46** | 0.60 |
| Hispanic vs. white | 1.60** | 1.74** | 1.12 |
| Black vs. white | 1.77** | 2.09** | 1.45 |
| Native American vs. white | 2.02** | 2.87** | 1.64 |
| Socioeconomic status | | | |
| Low vs. middle | 1.68** | 1.66** | 3.74** |
| High vs. middle | 0.49** | 0.44** | 0.41* |

¹ Odds ratios after controlling for the student's socioeconomic status, **race–ethnicity**, and **sex**.

² Not shown separately are persons whose **race–ethnicity** is unknown (approximately 2 percent of the unweighted sample).

NOTE: * indicates that the odds compared with the reference group are statistically significant at .05 level; ** at .01 level.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988 (NELS:88), "Base Year and First Follow-Up" surveys.

¹² Logistic regression equations were used to adjust for **SES**, **race–ethnicity**, and **sex**. See appendix A for a more detailed explanation of the adjustment **methodology**.

After adjusting for **SES** and **sex**, students from all minority groups appeared to drop out at much **more similar** rates as those of white **students**. That is, none of the adjusted odds ratios for these **comparisons** were statistically **significant**. However, even after controlling for **SES** and **sex**, **black**, **Hispanic**, and Native American students were **still** more likely than white students to achieve **below basic skill levels** in mathematics and **reading**. For instance, compared with white **students**, **black** students were **77** percent more **likely**, Hispanic students were **60** percent **more likely**, and Native American students were twice as likely to perform below the basic math skill level (**table 2.3**). Black students were about twice as likely as white students to fall below the basic proficiency level in **reading**, Hispanic students were about **74** percent more **likely**, and Native American students were **187** percent more **likely**.

The rest of this report explores the relationship between a variety of other variables and **at-risk** status—with “**at-risk**” status defined as performing below basic proficiency levels in mathematics and reading or as having dropout status as of the **10th grade**. The basic demographic variables presented in this chapter will be used as control variables in following **chapters**. That is, many of the variables examined in the following chapters are correlated with these basic demographic **characteristics**. For example, students from single-parent families are more likely to be from lower socioeconomic backgrounds than students from intact families. Any simple or **univariate** relationship between school outcomes and being from a single-parent family may be due to the **students**’ low-socioeconomic status rather than having a single parent *per se*. Therefore, in the following **chapters**, after the simple or univariate relationships are **presented**, the relationships between at-risk factors and *actual* at-risk status are shown after holding constant these three basic demographic **variables**.

Chapter 3

Family and Personal Background Factors

In addition to demographic **characteristics**, family characteristics have been shown to affect **students'** educational **success**. Both students from single-parent families and those from large **families** have been found to have greater risk of school **failure**.¹³ For example, **Zimiles** and **Lee**, in examining the High School and Beyond (HS&B) sophomore **cohort**, found that although the differences were **small**, students from intact families had higher test scores and grade-point averages than did students from either step-families or single-parent **families**. Further, the researchers found that in comparison with students from intact **families**, students from **step-families** and single-parent families were between two and three times more likely to drop out of school between their sophomore and senior **years**. **Zimiles** and Lee discovered that these associations were highly related to the sex of the student and that of the single parent or step-parent. For example, it was found that males drop out of high school more than do females when they live with a single **mother**, but the reverse is true when they live with a single **father**.¹⁴ **Heatherington, Featherman, and Camara**, in an extensive review of prior **studies**, found consistent differences of aptitude and achievement that favored children from two-parent families over those from one-parent **families**. However, they noted that these **differences**, although **significant**, were too small to be meaningful and were often established without adequate control of socioeconomic status or **race**.¹⁵

Other factors related to the family situation of students may also be associated with their educational **success**. For example, **Barro** and **Kolstad** found that the number of siblings a student had was associated with dropping **out**, although they surmised that this relationship was largely due to the effect of **SES**.¹⁶ In the following section, the student's **age**, the number of older sibling **dropouts**, and family **composition, size**, and mobility are examined to explore the relationship between these factors and school failure.

Results: Univariate Odds Ratios

Table 3.1 presents the simple odds ratios for family–personal background **factors**. Students who were overage for their **grade**, who were from single-parent **families**, who had older siblings who had dropped out of **school**, and who came from families that had moved frequently were all at greater risk of school failure than students who did not have these characteristics. For example, in terms of the odds **ratios**, being overage for their grade nearly tripled the likelihood of students performing below the basic proficiency level in **mathematics**, more than tripled the likelihood in **reading**, and increased by more than 11 times the likelihood of their dropping out (table 3.1).¹⁷ Students from single-parent families were about 55 percent to 65 percent more

¹³Ekstrom et al., "Who Drops Out and Why?" 1989; Mensch and Kandel, "Dropping Out and Drug Involvement," 1988; Pallas et al., "Changing Nature of the Disadvantaged," 1989; Rumberger, "A Review of Issues and Evidence," 1987.

¹⁴H. Zimiles and V.E. Lee, "Adolescent Family Structure and Educational Progress," *Developmental Psychology* 27 (1991): 314–320.

¹⁵E.M. Heatherington, D.L. Featherman, and K.A. Camara, *Intellectual Functioning and Achievement of Children in One-parent Households* (Washington, D.C.: National Institute of Education, 1981).

¹⁶S.M. Barro and A. Kolstad, "Who Drops Out of High School? Findings from High School and Beyond" (U.S. Department of Education Contractor Report, May 1987).

¹⁷It is not clear from the data presented here whether students are overage because they were retained in school or

likely to perform below the basic skill levels and more than three times as likely to drop out as students from two-parent **families**. **Similarly**, compared with students without older siblings who dropped **out**, students with one older sibling who dropped out were more likely to have poor school **outcomes**. In fact, in terms of odds **ratios**, they were **47** percent more likely to fail to reach the basic math **level**, **38** percent more likely not to reach the basic reading **level**, and **more** than twice as likely to drop **out**. Students with more than one older sibling dropout were at an even greater risk of failing to attain the basic math proficiency level and of dropping **out**.

In terms of odds **ratios**, students from very large families (**eight** or more **people**) were **more** likely to perform below the basic math and reading levels than were students in small families (**two** to **three** **members**). **However**, students in medium-sized families (**four** or **five** **people**) were about **50** percent less likely to drop out than were students in small **families**. Family **mobility**, measured by the number of times a student had changed **schools**, was also associated with poor educational **outcomes**.¹⁸ Compared with students who had never changed **schools**, in **terms** of odds ratios students who had changed schools twice were almost two and one-half times as **likely** to drop **out**, those who had changed schools three times were three times as **likely**, and students who had changed schools four times were four times as **likely** to drop **out**.

because they entered school late for their **age**. However, certain items in the NELS:88 base-year data set ask the students whether they have been retained and thereby enable an analysis of the independent effect of being **overage**. A later chapter explores the independent effect of repeating earlier **grades**.

¹⁸In counting the number of times the student had changed **schools**, movements resulting from a promotion and movements between schools within a single school district were **dismissed**.

Table 3.1—Odds ratios of eighth-grade students in 1988 performing below basic levels of reading and mathematics in 1988 and dropping out of school, 1988 to 1990, by family background factors

| Variable | Below basic mathematics | Below basic reading | Dropped out |
|---|-------------------------|---------------------|-------------|
| Student is overage for grade Yes vs. no | 2.88** | 3.19** | 11.42** |
| Family composition Single parent vs. two parents | 1.65** | 1.56** | 3.26** |
| Family size 4–5 people vs. 2–3 people | 0.78** | 0.89 | 0.47** |
| 6–7 people vs. 2–3 people | 1.03 | 1.14 | 0.69 |
| 8 or more people vs. 2–3 people | 1.31** | 1.63** | 1.30 |
| Number of older sibling dropouts 1 vs. none | 1.47** | 1.38** | 2.41** |
| 2 or more vs. none | 1.78** | 1.47** | 3.48** |
| Changed schools Once vs. not at all | 1.01 | 1.18* | 1.76* |
| Twice vs. not at all | 1.30** | 1.60** | 2.46** |
| Three times vs. not at all | 1.44** | 1.48** | 3.01** |
| Four times vs. not at all | 1.34 | 1.34** | 3.99** |
| Five+ times vs. not at all | 1.17 | 1.16 | 8.91** |

NOTE: * indicates that the odds compared with the reference group are statistically significant at .05 level; ** at .01 level.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988 (NELS:88), "Base Year and First Follow-Up" surveys.

Results: Multivariate Odds Ratios

Many of these family–personal background factors are associated with socioeconomic status, race–ethnicity, or both. For example, students who have single parents or come from large families are perhaps more likely to come from low-SES backgrounds. Therefore, the odds ratios presented in table 3.2 for these risk factors are adjusted for student SES, race–ethnicity, and sex.

After adjusting for these demographic variables, students who were overage, who were from single-parent families, or who had older siblings who had dropped out were still more likely to have poor school outcomes. In terms of the adjusted odds ratios, compared with their younger counterparts, overaged students were more than twice as likely to perform below the basic levels, and were more than eight times as likely to drop out of school (table 3.2). Similarly, after adjusting for SES, race–ethnicity, and sex, students from single-parent families were still more likely to fail to perform at the basic proficiency levels. They were about one-quarter to one-

third **more** likely to perform below the basic reading and math levels and **were more** than two and a half **times** as likely to drop out of school as were students from two-parent **families**.

Similarly, after holding **SES**, **race-ethnicity**, and **sex constant**, students with one older sibling dropout were **19** percent more likely to **perform** below the basic math level than were students without an older sibling **dropout**; students with an older sibling dropout were also about **75** percent more likely to drop **out**. **Furthermore**, students with two or more older sibling dropouts were one-third more likely to perform below the basic math level and twice as **likely** to drop out of school as students without an older sibling **dropout**.

Family mobility had a significant association with poor school **outcomes**, independent of the **student's sex**, **race-ethnicity** and socioeconomic **status**. Using students who had never changed schools as the comparison **group**, it was found that changing schools two to four times increased the likelihood of performing below the basic math level by about **20** percent or more in **terms** of the odds **ratios**. Students who had changed schools one to three times increased their likelihood of performing below the basic reading level by about **20** percent to **40 percent**. Changing schools also had a significant relationship to dropping **out**: the odds of dropping out **steadily** rose as the number of school changes **increased**. After adjusting for **SES**, **race-ethnicity**, and **sex**, students who had changed schools once were **80** percent more likely to drop **out**, while students who had changed schools twice were more than twice as likely to drop out as students who had never changed **schools**. Students who had changed schools five times or more during their first eight grades of schooling were more than eight times as likely to drop out as those students who had never changed **schools**.

Table 3.2—Adjusted odds ratios[†] of eighth-grade students in 1988 performing below basic levels of reading and mathematics in 1988 and dropping out of school, 1988 to 1990, by family background factors

| Variable | Below basic mathematics | Below basic reading | Dropped out |
|--|-------------------------|---------------------|-------------|
| Student is overage for grade Yes vs. no | 2.20** | 2.35** | 8.37** |
| Family composition Single parent vs. two parents | 1.35** | 1.24** | 2.64** |
| Family size 4–5 people vs. 2–3 people | 0.87* | 1.01 | 0.53** |
| 6–7 people vs. 2–3 people | 1.00 | 1.07 | 0.64 |
| 8 or more people vs. 2–3 people | 1.02 | 1.24 | 0.91 |
| Number of older sibling dropouts 1 vs. none | 1.19** | 1.09 | 1.76** |
| 2 or more vs. none | 1.34** | 1.08 | 2.04** |
| Changed schools Once vs. not at all | 1.01 | 1.18** | 1.80* |
| Twice vs. not at all | 1.17* | 1.41** | 2.25** |
| Three times vs. not at all | 1.34** | 1.32** | 2.83** |
| Four times vs. not at all | 1.21* | 1.18 | 4.07** |
| Five+ times vs. not at all | 1.07 | 1.04 | 8.13** |

† Odds ratios after controlling for the student's socioeconomic status, race–ethnicity, and sex.

NOTE: * indicates that the odds compared with the reference group are statistically significant at .05 level; ** at .01 level.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988 (NELS:88), "Base Year and First Follow-Up" surveys.

Summary

It has been known for a long time that the characteristics of a student's family can have a profound impact on the student's educational attainment. It is therefore not particularly surprising that in this analysis there were several factors related to the student's family–personal background that may have influenced the student's educational outcomes.

However, given the educational impact of socioeconomic status and the fact that many family background characteristics are correlated with SES, it is interesting that these relationships held even when the student's sex, race–ethnicity, and socioeconomic status were held constant. For instance, in terms of odds, students who were overage for their grade, who were from single-parent families, or who had frequently changed schools were more likely than other

students to have low basic **skills** in mathematics and reading and were more likely to drop out regardless of their **sex, race–ethnicity, or SES**. Students who had one or more older siblings who had dropped out were also more likely to have low mathematics skills and were more likely to drop **out**.

Chapter 4

Parental Involvement

Several researchers have identified poor relationships with parents as contributors to students' risk for school **failure**. Finn cited a study by **Hirschi** in which delinquency was more **frequent** among students whose parents did not know where their children were when the youngsters were not at home and among students who did not share their thoughts and feelings with their **parents**. Finn also cited a study by Cervantes in which students who failed in school were found to come from families in which members were more isolated from each other and from **non-family** members than were the family members of children who were successful in **school**. Ekstrom and her colleagues also found that at-risk students talked less with their parents about their thoughts and **feelings**.¹⁹

In studying homework practices among Maryland elementary school **students**, J. Epstein found that students who liked to talk about **school** and their homework with their parents and those who were not anxious about working on assignments with their parents had higher reading and math skills and were more often considered "homework stars" by their **teachers**.²⁰ In **addition**, the educational expectations and aspirations of parents also have been considered as critical for the child's educational **success**.²¹ In fact, when examining the effect of **single**- versus two-parent **families**, Milne, Myers, Rosenthal, and Ginsburg found that **parents'** educational expectations were significant mediators of the negative effects of single-parent family **membership**, in addition to **SES**.²²

The **NELS:88** parent questionnaire requested parents to indicate their involvement in their child's school **activities**, the frequency with which they discussed school-related topics with their **children**, and their expectations for their child's educational **career**.²³ The following section relates parent responses to these items to the students' test performances and incidence of dropping **out**.

Results: Univariate Odds Ratios

A low amount of parental involvement in PTA and school volunteer activities was associated with low student performance and an increased risk of dropping out (**table 4.1**). Specifically, in terms of the **odds**, children of parents with low school involvement were about 40 percent more likely to perform below the basic math and reading levels and were more than twice as likely to drop out of school as were children of parents with moderate **involvement**.

¹⁹J.D. Finn, "Withdrawning from School," *Review of Educational Research* 59 (1989):117-142; Ekstrom et al., "Who Drops Out and Why?" 1989.

²⁰Joyce L. Epstein, Center for Research on Elementary and Middle Schools, *Homework Practices, Achievements, and Behaviors of Elementary School Students*, Report No. 26 (Baltimore: The Johns Hopkins University, July 1988).

²¹See, for example, W. Sewell and R. Hauser, "Causes and Consequences of Higher Education: Models of the Status Attainment Process," *American Journal of Agricultural Economics* 54 (1972):851-861.

²²A.M. Milne, D.E. Myers, A.S. Rosenthal, and A. Ginsberg, "Single Parents, Working Mothers, and the Educational Achievement of School Children," *Sociology of Education* 59 (July 1986):125-139.

²³The variable representing parental involvement with the school is a composite variable made up of several items from the **NELS:88** Base-Year Parent Survey measuring the parent's involvement with the PTA or other volunteer activities at the **school**. See appendix A for a full description of the variables used in this **analysis**.

In terms of the odds **ratios**, students whose parents infrequently talked about school activities and plans were more likely to perform below the basic proficiency levels and to drop **out**. For **example**, compared with students whose parents stated that they talked about school regularly with their **children**, students whose parents discussed school only occasionally were about **25** percent more likely to fail to reach the basic proficiency **levels**; those whose parents rarely discussed school were over **50** percent more likely to fail to reach the basic **levels**; and those whose parents never discussed school were twice as likely to **fail**. Students whose parents never discussed school with them were more than **11** times as likely to drop out as were those whose parents regularly did **so**.

It remains unclear to what extent **parents**' expectations of their children's success affect **students**' actual **performance**, or how students' performance **informs** their parents' **expectations**; in any **case**, **students**' at-risk status was associated with parental expectations for their children's **education**. In terms of the odds **ratios**, students whose parents expected them to attain a **4**- year **degree** or higher **were** about **50** percent less likely to fail to achieve the basic proficiency level in math or reading and were about **70** percent less likely to drop out of school than were students whose parents expected only some college education (**table 4.1**). Students whose parents expected them to receive **postsecondary** vocational education were about **50** percent more likely to perform below the basic proficiency levels and **86** percent more likely to drop out than were students who were expected to finish only some **college**. In terms of the odds **ratios**, students whose parents did not expect them to finish high school were almost four times as likely to perform below the basic math level and almost two and one-half times as likely to perform below the basic reading level as students whose parents expected some college **education**. Furthermore, these eighth graders with low parental expectations were more than **16** times more likely to drop out of **school**.

Table 4.1—Odds ratios of eighth-grade students in 1988 performing below basic levels of reading and mathematics in 1988 and dropping out of school, 1988 to 1990, by parental involvement

| Variable | Below basic mathematics | Below basic reading | Dropped out |
|---|-------------------------|---------------------|-------------|
| Parental involvement in PTA/school | | | |
| Low vs. medium | 1.42** | 1.39** | 2.26** |
| High vs. medium | 0.80* | 0.82 | 0.36** |
| Parent talks about school with student | | | |
| Not at all vs. regularly | 2.09** | 2.04** | 11.53** |
| Rarely vs. regularly | 1.56** | 1.66** | 2.57** |
| Occasionally vs. regularly | 1.24** | 1.34** | 1.70** |
| Parent talks about high school plans with student | | | |
| Not at all vs. regularly | 1.49** | 1.35 | 4.39** |
| Rarely vs. regularly | 1.07 | 1.25* | 1.31 |
| Occasionally vs. regularly | 0.92 | 0.97 | 0.97 |
| Parent talks about postsecondary education plans with student | | | |
| Not at all vs. regularly | 1.76** | 1.67** | 4.33** |
| Rarely vs. regularly | 1.12 | 1.28** | 1.50 |
| Occasionally vs. regularly | 0.91* | 1.00 | 0.81 |
| Parent's educational expectations for student | | | |
| Less than HS diploma vs. some college | 3.82** | 2.47** | 16.22** |
| GED/HS diploma vs. some college | 1.48 | 0.94 | 20.47** |
| Vocational education vs. some college | 1.59** | 1.50** | 1.86* |
| 4-year degree vs. some college | 0.54** | 0.51** | 0.29** |
| Advanced degree vs. some college | 0.34** | 0.35** | 0.16** |

NOTE: * indicates that the odds compared with the reference group are statistically significant at .05 level; ** at .01 level.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988 (NELS:88), "Base Year and First Follow-Up" surveys.

Results: Multivariate Odds Ratios

It is likely that a number of the parental involvement variables are related to **SES** and to **race–ethnicity**. High-socioeconomic parents may have more time to become involved in PTA or school **activities**; minority parents may be less likely to participate in school **activities**. **Furthermore**, more highly educated parents are perhaps more likely to expect their **children** to follow their lead into higher **education**. **Therefore**, the odds ratios presented above may reflect the parent's educational attainment or socioeconomic status rather than the more specific factors of parental involvement and **expectation**. Table 4.2, below, presents the relative odds of students performing below basic proficiency levels and dropping out after controlling for **SES**, **race–ethnicity**, and **sex**.

Even after controlling for **SES**, **race–ethnicity**, and **sex**, parental involvement in the PTA and other school activities was associated with student performance and dropping **out**. In **terms** of the odds **ratios**, students whose parents had a low PTA or school involvement were about 20 percent more likely than students whose parents were moderately involved to perform below the basic math and reading levels (table 4.2). **Furthermore**, these students were more than half again as likely to drop out of **school**. In other words, within the same **SES** levels and when of the same **race–ethnicity** and **sex**, students whose parents were less involved with school activities were more likely to drop out than students whose parents were moderately involved.

Overall, the frequency of discussions between parents and students about school and their education was no longer associated with test **performance** after holding **SES**, **race–ethnicity**, and **sex** **constant**. **However**, the frequency of these discussions was still associated with dropping out of school between the 8th and 10th **grades**. After controlling for the basic demographic **variables**, students who never had conversations with their parents about school were almost three times more likely than those who regularly held these types of conversations to drop out of **school**. In terms of the odds **ratios**, students who never talked about their high school plans were almost six times more likely to drop **out**, and students who never talked about continuing their education after high school were about two and a half times more likely to drop out than students who had these regular conversations with their **parents**.

Parental expectations of their children's educational futures were significantly associated with the students' test **performances** and **dropout status**, even after controlling for **SES**, **race–ethnicity**, and **sex**. Parents who expected more of their children in terms of education had children who were performing at least adequately in **school**. In terms of the odds **ratios**, students whose parents **did** not expect them to even graduate from high school were three and one-half times as likely to perform below the basic math **level** and more than twice as likely to perform below the basic reading level as students who were expected to complete some **college**. **Furthermore**, these students were almost 14 percent more likely to drop out of school than students who were expected to receive at least some college **education**.

Table 4.2—Adjusted odds ratios[†] of eighth-grade students in 1988 performing below basic levels of reading and mathematics in 1988 and dropping out of school, 1988 to 1990, by parental involvement

| Variable | Below basic mathematics | Below basic reading | Dropped out |
|---|-------------------------|---------------------|-------------|
| Parental involvement in PTA/school | | | |
| Low vs. medium | 1.21** | 1.18** | 1.64* |
| High vs. medium | 0.94 | 0.98 | 0.43* |
| Parent talks about school with student | | | |
| Not at all vs. regularly | 1.18 | 2.04 | 2.86* |
| Rarely vs. regularly | 1.04 | 1.66 | 1.04 |
| Occasionally vs. regularly | 1.01 | 1.34 | 0.94 |
| Parent talks about high school plans with student | | | |
| Not at all vs. regularly | 1.12 | 1.35 | 5.75* |
| Rarely vs. regularly | 0.94 | 1.25 | 1.46 |
| Occasionally vs. regularly | 0.93 | 0.97 | 1.23 |
| Parent talks about postsecondary education plans with student | | | |
| Not at all vs. regularly | 1.28* | 1.19 | 2.55** |
| Rarely vs. regularly | 1.03 | 1.20* | 1.12 |
| Occasionally vs. regularly | 0.95 | 1.08 | 0.82 |
| Parent's educational expectations for student | | | |
| Less than HS diploma vs. some college | 3.50** | 2.13** | 13.79** |
| GED/HS diploma vs. some college | 1.37 | 0.79 | 17.43** |
| Vocational education vs. some college | 1.59** | 1.47** | 1.70 |
| Four-year degree vs. some college | 0.67** | 0.63** | 0.40** |
| Advanced degree vs. some college | 0.39** | 0.41** | 0.21** |

[†] Odds ratios after controlling for the student's socioeconomic status, race–ethnicity, and sex.

NOTE: * indicates that the odds compared with the reference group are statistically significant at .05 level; ** at .01 level.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988 (NELS:88), "Base Year and First Follow-Up" surveys.

Summary

Increased parental participation in the student's education is a prominent feature of many school reform efforts in general and of several programs for at-risk youth in particular.²⁴ It is **noteworthy, therefore**, that the results of this analysis show an association between **parents** taking an active part in the student's education and student **outcomes**. **However**, this association between student outcomes and **parental involvement** may merely indicate that parents whose children excel in school are more likely than other parents to take an active part in **school**. Without measures of prior student achievement it is not possible to judge the impact of parental involvement on student **outcomes**. **Nonetheless**, parental involvement in school activities had a consistent effect on all three measures of school **failure**, even after holding constant the student's **sex, race–ethnicity**, and socioeconomic **status**. In terms of the odds **ratios**, eighth graders with parents who were infrequently involved in their school were about 20 percent more likely to perform below basic skill levels and were 60 percent more likely to drop **out**. The frequency of discussions between the parent and the child about school-related concerns also had a consistent impact on whether or not the student dropped **out**. Students were particularly at risk if their parents never talked to them about these **matters**. **Furthermore**, students with parents who expected them to achieve a lower level of education were more likely to drop out and to have poor basic skills than other students, regardless of the student's **sex, race–ethnicity**, or socioeconomic **status**.

²⁴Slavin et al., *Effective Programs for Students At Risk*, 1989.

Chapter 5

Academic History and Characteristics

A number of educational research studies have established that poor school achievement is an important predictor of school **failure**. In fact, Barrington and Hendricks found that at-risk students could be identified as underachievers as early as the third **grade**. Retention in grade as early as the primary years was shown to significantly increase **children's** risk of school **failure**.²⁵ In high **school**, students in the general or vocational tracks were found to be at greater risk than students in the academic **track**.²⁶ Moreover, students who did less homework were also noted to be less likely to succeed in **school**.²⁷ Although several studies have shown that at-risk students score at the average level on measures of cognitive **ability**, indicating that they do have the ability to succeed in **school**,²⁸ students who are at risk **score** lower than non-at-risk students on achievement tests and earn lower grade-point **averages**.²⁹

Wolman, Bruininks, and Thurlow found that although handicapped students were generally at greater risk than non-handicapped **students**, learning disabled students and students with emotional disturbances experienced an even greater risk of failure than did most handicapped **students**. Among learning disabled **students**, those who were identified as "**learning disabled**" later in their school careers or who had received fewer special services were more likely to fail than those who were identified earlier or who had received more special **services**.³⁰

²⁵M.E. Binkley and R.W. Hooper, *Statistical Profile of Students Who Dropped Out of High School during School Year 1987-88*, Department of Research and Evaluation, Metropolitan Board of Public Education, ED 311 575 (Nashville: June 1989); Cairns et al., "Configurations and Determinants," 1989; Ekstrom et al., "Who Drops Out and Why?" 1989; H. Garber, P. Sunshine, and C. Reid, "Dropping Out and Returning to Urban Schools: Understanding Why Both Happen," (Paper presented at the annual meeting of the American Educational Research Association, March 1989, Sari Francisco, CA); Rumberger, "A Review of Issues and Evidence," 1987.

²⁶J.B. Stedman, L.H. Salganik, and C.A. Celebuski, "Dropping Out: Educational Vulnerability of At-Risk Youth" (Library of Congress, Congressional Research Service, ED 300495, Washington, D.C.:1988).

²⁷Ekstrom et al., "Who Drops Out and Why?" 1989; Finn, "Withdrawning from School," 1989; Stedman et al., "Educational Vulnerability of At-Risk Youth," 1988.

²⁸B.L. Barrington and B. Hendricks, "Differentiating Characteristics of High School **Graduates**, **Dropouts**, and **Nongraduates**," *Journal of Educational Research* 82 (1989):309-319; P.M.G. Lopez, "Why Do They Leave? Social/Affective vs. Cognitive Predictors: A Developmental Look at Dropouts," (Paper presented at the annual meeting of the American Educational Research Association, April 11-16, 1990, Boston, MA).

²⁹Binkley and Hooper, "Statistical Profile," 1989; Ekstrom et al., "Who Drops Out and Why?" 1989; Fine, "Why Urban Adolescents Drop Into and Out of School," 1987; Lopez, "Why do They Leave?" 1990; Rumberger, "A Review of Issues and Evidence," 1987; Tidwell, "Dropouts Speak Out," 1988.

³⁰C. Wolman, R. Bruininks, and M.L. Thurlow, "Dropouts and Dropout Programs: Implications for Special Education," *Remedial and Special Education* 10 (1989): 6-20.

At-risk students also tend to feel more alienated from school, evidenced by low levels of participation in school as early as the third grade.³¹ In their analysis of the High School & Beyond data, Ekstrom and her colleagues found that at-risk students were less satisfied with their educational progress, were less interested in school, were less likely to enjoy working in school, were less likely to feel popular with other students, and were less likely to believe that other students thought they were good students, good athletes, or important.³²

In examining students surveyed in NELS:88, almost all of these characteristics—past academic performance, amount of homework done, emotional or learning disabilities, enrollment in particular types of classes, academic self-concept, and postsecondary plans—had a significant association with math and reading performance and with dropping out of school between the 8th and 10th grades. In the following section, these patterns and associations are explored.

Results: Univariate Odds Ratios

In terms of the simple odds ratios, students who had repeated a grade were more than two and a half times as likely as were students who had not repeated a grade to perform below the basic levels on the math and reading achievement tests (table 5.1). Students who had repeated an early grade—kindergarten through fourth grade—were almost five times as likely to drop out of school as those who had not; students who had repeated a later grade—fifth through eighth grade—were almost 11 times as likely to drop out as those students who had never repeated these grades.

The association between at-risk status and prior academic performance shown in previous studies was supported by the NELS:88 data. When compared with “C” students, “A” students were about 60 percent and “B” students were about 40 percent less likely to perform below the basic proficiency levels. In terms of the simple odds ratios, students who had earned mostly “D”s since the sixth grade were about 50 percent more likely to perform below the basic proficiencies, and those who earned grades below a “D” were about twice as likely to perform below basic levels. In addition, “D” students were more than two and one-half times as likely to drop out as “C” students. The amount of homework done was also associated with poor performance on the achievement tests. Students who spent between 0.5 and 3 hours on their homework each week were almost twice as likely to fail to achieve the basic math and reading proficiency levels and were more than twice as likely to drop out of school as were students who spent 10.5 hours per week on their homework (more than 2 hours per day). Even those students who spent between 3 and 5.5 hours on their homework were more than one and one-half times as likely to perform below the basic levels and to drop out as were those students who spent more than 10.5 hours.

Not surprisingly, learning problems, emotional problems, and participation in special education programs for students with learning disabilities were all associated with an increased risk of performing below the basic math and reading proficiency levels (table 5.1). In addition, students with these characteristics were far more likely to drop out of school between the 8th and 10th grades than were other students. For example, in terms of the simple odds ratios, students in special education were about two and a half times as likely to drop out, students with learning problems were more than three times as likely, and students with emotional problems were almost six times as likely to drop out as were other students.

³¹Finn, “Withdrawning from School,” 1989.

³²Cairns et al., “Configurations and Determinants,” 1989; J.S. Catterall, “An Intensive Group Counseling Dropout Prevention Intervention: Some Cautions on Isolating At-Risk Adolescents within High Schools,” *American Educational Research Journal* 24 (1987): 521–540; Finn, “Withdrawning from School,” 1989; Rumberger, “A Review of Issues and Evidence,” 1987; Ekstrom et al., “Who Drops Out and Why?” 1989.

Table S. 1—Odds ratios of eighth-grade students in 1988 performing below basic levels of reading and mathematics in 1988 and dropping out of school, 1988 to 1990, by academic characteristics

| Variable | Below basic mathematics | Below basic reading | Dropped out |
|---|-------------------------|---------------------|-------------|
| Repeated any grades K through 4 Yes vs. no | 2.69** | 3.00** | 5.02** |
| Repeated any grades 5 through 8 Yes vs. no | 3.03** | 3.21** | 11.13** |
| English grades since 6th grade | | | |
| Mostly As vs. Cs | 0.37** | 0.36** | 0.26** |
| Mostly Bs vs. Cs | 0.58** | 0.63** | 0.36** |
| Mostly Ds vs. Cs | 1.49** | 1.47** | 2.56** |
| Mostly below D vs. Cs | 2.13** | 2.03** | 1.51 |
| Math grades since 6th grade | | | |
| Mostly As vs. Cs | 0.32** | 0.52** | 0.35** |
| Mostly Bs vs. Cs | 0.55** | 0.70** | 0.55** |
| Mostly Ds vs. Cs | 1.62** | 1.43** | 3.11** |
| Mostly below D vs. Cs | 2.39** | 2.00** | 3.61** |
| Hours of homework per week | | | |
| None vs. more than 10.5 hours | 4.25** | 3.23** | 10.62** |
| .5 to < 3 hours vs. more than 10.5 hours | 1.88** | 1.81** | 2.22** |
| 3 to < 5.5 hours vs. more than 10.5 hours | 1.62** | 1.57** | 1.87* |
| 5.5 to < 10.5 hours vs. more than 10.5 hours | 1.21* | 1.47** | 1.50 |

See footnote at end of table.

Table 5.1—Odds ratios of eighth-grade students in 1988 performing below basic levels of reading and mathematics in 1988 and dropping out of school, 1988 to 1990, by academic characteristics—Continued

| Variable | Below basic mathematics | Below basic reading | Dropped out |
|--|-------------------------|---------------------|-------------|
| Has learning problem Yes vs. no | 3.51** | 3.62** | 3.20** |
| Has emotional problem Yes vs. no | 2.18** | 1.88** | 5.80** |
| In special education Yes vs. no | 5.28** | 5.09** | 2.42** |
| Attends remedial English Yes vs. no | 1.57** | 1.67** | 1.17 |
| Mathematics class | | | |
| Remedial vs. regular | 3.04** | 2.69** | 2.87** |
| Algebra vs. regular | 0.40** | 0.52** | 0.45** |
| Student seen by others as: | | | |
| A very good vs. a somewhat good student | 0.64** | 0.70** | 0.67* |
| Not at all a good student vs. a somewhat good student | 1.99** | 1.62** | 3.77** |
| How sure will graduate from HS: | | | |
| Very sure vs. probably sure | 0.44** | 0.44** | 0.29** |
| Probably will not vs. probably sure | 2.46** | 2.11** | 8.79** |
| Postsecondary education plans | | | |
| Less than HS diploma vs. HS diploma only | 2.41** | 1.76** | 5.13** |
| Some college vs. HS diploma only | 0.73** | 0.71** | 0.55** |
| 4-year college vs. HS diploma only | 0.33** | 0.32** | 0.21** |
| Postcollege vs. HS diploma only | 0.25** | 0.24** | 0.13** |

NOTE: * indicates that the odds compared with the reference group are statistically significant at .05 level; ** at .01 level.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988 (NELS:88), "Base Year and First Follow-Up" surveys.

Also not surprisingly, students enrolled in remedial classes were more likely to perform below the basic proficiency levels in both math and reading. Specifically, those enrolled in remedial English were about one and one-half times as likely to perform below the basic levels in both math and reading as other students. However, in terms of the simple odds ratios, students enrolled in remedial math classes were three times as likely to perform below the basic math level, and more than two and a half times as likely to perform below the basic reading level as those enrolled in regular math classes. These remedial math students were also nearly three times as likely to drop out as were students enrolled in regular math classes.

Those with greater amounts of confidence in their abilities as a student and with plans for an educational future beyond high school graduation were less likely to perform below the basic proficiency levels and were also less likely to drop out than their less confident peers. For example, compared with students who stated that their classmates saw them as “somewhat” of a good student, those who indicated that other students did not see them as very good students were almost twice as likely to perform below the basic math proficiency level, more than one and one-half times as likely to perform below the basic reading level, and almost four times as likely to drop out.³³ Similarly, eighth-grade students who felt that they probably would not graduate from high school were more than twice as likely (in terms of the simple odds ratios) to perform below the basic proficiency levels and almost nine times as likely to drop out as those who were more confident of their eventual high school graduation.

Results: Multivariate Odds Ratios

With few exceptions, the relationships seen between proficiency in basic skills and dropout status and the variables gauging students’ academic histories and characteristics were not dependent upon the students’ socioeconomic status, race–ethnicity, or sex. After adjusting for the basic demographic variables, very few significant changes occurred, indicating that most of these relationships were consistent across SES levels, among racial–ethnic categories, and between the sexes. Exceptions included repetition of grades, hours spent on homework, and participation in special education programs.

After adjusting for SES, race–ethnicity, and sex, the relative risk of students who had repeated grades decreased. However, in terms of the adjusted odds ratios, these students were still more than twice as likely to perform below the basic math and reading proficiency levels than were their peers who had not repeated a previous grade (table 5.2). Students who had repeated a grade between kindergarten and fourth grade were still almost three times more likely to drop out; students who had repeated a later grade were almost seven times more likely to drop out.

Similarly, students who spent little time on their homework were still more likely to have poor student outcomes than students who spent, on average, little more than 2 hours per day on their assignments. Compared with students who spent 10.5 hours per week or more, students who did not do any homework were more than three times more likely to perform below the basic math level, about two times more likely to perform below the basic reading level, and eight times more likely to drop out of school. In terms of the adjusted odds ratios, students who spent some time on their homework, but less than 3 hours, were still about 50 percent more likely to perform below the basic proficiency levels and were 72 percent more likely to drop out.

³³ Students chose one of the following responses—“very, somewhat, or not at all”—in response to the specific question: “Other students in class see you as a good student.” This question was included within a series of questions entitled, “How do you think other students in your classes see you?”

Summary

As expected, students' prior educational performance was associated with how they performed on achievement tests in the eighth grade. Students with a history of poor academic achievement were also more likely to drop out of school between the 8th and the 10th grades. These relationships were consistent after holding constant the student's sex, race-ethnicity, and socioeconomic status. Students with a history of poor grades in mathematics and English, who did little or no homework, or who had repeated an earlier grade were more likely to be at risk of school failure. Students with special needs—those with a learning or emotional problem or who attended special education classes—were also more at risk than were other students.

Table 5.2—Adjusted odds ratios[†] of eighth-grade students in 1988 performing below basic levels of reading and mathematics in 1988 and dropping out of school, 1988 to 1990, by academic characteristics

| Variable | Below basic mathematics | Below basic reading | Dropped out |
|--|-------------------------|---------------------|-------------|
| Repeated any grades K through 4 | | | |
| Yes vs. no | 2.15** | 2.35** | 2.73** |
| Repeated any grades 5 through 8 | | | |
| Yes vs. no | 2.37** | 2.43** | 6.69** |
| English grades since 6th grade | | | |
| Mostly As vs. Cs | 0.44** | 0.45** | 0.33** |
| Mostly Bs vs. Cs | 0.63** | 0.69** | 0.41** |
| Mostly Ds vs. Cs | 1.37** | 1.33** | 2.39** |
| Mostly below D vs. Cs | 2.01** | 1.83** | 1.42 |
| Math grades since 6th grade | | | |
| Mostly As vs. Cs | 0.36** | 0.60** | 0.42** |
| Mostly Bs vs. Cs | 0.59** | 0.78** | 0.63* |
| Mostly Ds vs. Cs | 1.52** | 1.32** | 2.91** |
| Mostly below D vs. Cs | 2.23** | 1.84** | 3.45** |
| Hours of homework per week | | | |
| None vs. more than 10.5 hours | 3.25** | 2.35** | 8.14** |
| .5 to < 3 hours vs. more than 10.5 hours | 1.60** | 1.51** | 1.72* |
| 3 to < 5.5 hours vs. more than 10.5 hours | 1.39** | 1.33** | 1.53 |
| 5.5 to < 10.5 hours vs. more than 10.5 hours | 1.11 | 1.35** | 1.33 |
| Has learning problem | | | |
| Yes vs. no | 3.57** | 3.69** | 3.17** |
| Has emotional problem | | | |
| Yes vs. no | 2.01** | 1.71** | 5.44** |
| In special education | | | |
| Yes vs. no | 4.88** | 4.64** | 2.01** |
| Attends remedial English | | | |
| Yes vs. no | 1.50** | 1.58** | 1.09 |
| Mathematics class | | | |
| Remedial vs. regular | 2.76** | 2.32** | 2.48** |
| Algebra vs. regular | 0.46** | 0.61** | 0.59* |

See footnote at end of table.

Table 5.2—Adjusted odds ratios[†] of eighth-grade students in 1988 performing below basic levels of reading and mathematics in 1988 and dropping out of school, 1988 to 1990, by academic characteristics—Continued

| Variable | Below basic mathematics | Below basic reading | Dropped out |
|---|-------------------------|---------------------|-------------|
| Student seen by others as: | | | |
| A very good vs. a somewhat good student | 0.66** | 0.73** | 0.71 |
| Not at all a good student vs. a somewhat good student | 1.91** | 1.51** | 3.43** |
| How sure will graduate from HS: | | | |
| Very sure vs. probably sure | 0.52** | 0.53** | 0.38** |
| Probably will not vs. probably sure | 2.28** | 1.95** | 8.34** |
| Postsecondary education plans | | | |
| Less than HS diploma vs. HS diploma only | 2.35** | 1.68** | 5.68** |
| Some college vs. HS diploma only | 0.77** | 0.74** | 0.65* |
| 4-year college vs. HS diploma only | 0.40** | 0.40** | 0.34** |
| Postcollege vs. HS diploma only | 0.33** | 0.33** | 0.25** |

[†] Odds ratios after controlling for the student's socioeconomic status, race–ethnicity, and sex.

NOTE: * indicates that the odds compared with the reference group are statistically significant at .05 level; ** at .01 level.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988 (NELS:88), "Base Year and First Follow-Up" surveys.

Chapter 6

Student Behaviors

At-risk students have been shown to exhibit more aggressive behavior than their **non-at-risk counterparts**.³⁴ In their study of Mexican-American and white at-risk **students**, **Chavez, Edwards, and Oetting** noted that many students who fail in school “live in a violent and dangerous **world**,” as evidenced by the large differences **found** between at-risk students and their non-at-risk counterparts in relation to their experiences as both victims and perpetrators of violent **crime**. Several researchers have observed that at-risk students are more likely to encounter problems with both legal and school **authorities**. **Delinquency, truancy, suspension, and expulsion** are all observed more frequently among at-risk students.³⁵

Barrington and Hendricks found, in their longitudinal study, that fifth-grade at-risk students attended school significantly less often than did students who succeeded in **school**. **Moreover, Binkley and Hooper** discovered that attendance rates differed substantially between **at-risk** and **non-at-risk students**: at-risk students’ attendance rates averaged **80 percent**, while those for **non-at-risk** students averaged **92 percent**. **Farrell** and his colleagues speculated that students’ disengagement **from** the educational process had less to do with disinterest in learning than with a self-protective disengagement from a system in which they had consistently been unable to earn scarce **rewards**.³⁶

Researchers have examined illegal drug and alcohol use and have found different patterns of use among male and female at-risk students. Although use of alcohol did not differentiate **at-risk** from **non-at-risk students**, **Mensch and Kandel** found that **non-at-risk** students were more likely to use illegal substances only on an experimental basis, whereas among **at-risk students**, there was more lifetime or annual illegal substance use and greater intensity of such use than among **non-at-risk students**.³⁷ **Moreover**, it has been found that the earlier a child begins using most substances (tobacco among males is an **exception**), the greater the risk of **school failure**. For **boys**, using drugs that are “**more illicit**” (for example, cocaine as opposed to **marijuana**) increased the risk of **school failure**. For **girls**, smoking tobacco or **marijuana** were stronger predictors of failure than for **boys**, although the time when the substance abuse began was less important for **girls** than for **boys**. Unlike **Mensch and Kandel**, **Chavez** and his colleagues found greater use of alcohol among dropouts and at-risk students than among control **students**.

There were a number of variables in the **NELS:88** data set that measured these types of **student behaviors**. For **example**, several variables provide measures of the priority students gave to their **classwork**: whether or not they came to class with the proper **materials**, how often they came to class **late**, and how often they cut class. Although the base year of the **NELS:88** data set does not provide information on **students**’ use of drugs and alcohol, **students** were asked

³⁴Cairns et al., “Configurations and Determinants,” 1989; Lopez, “Why do They Leave?” 1990.

³⁵Binkley and Hooper, “Statistical Profile,” 1989; Ekstrom et al., “Who Drops Out and Why?” 1989; Fine, “Why Urban Adolescents Drop Into and Out of School,” 1987; Finn, “Withdrawing from School,” 1989; D. Mann, “Can We Help Dropouts? Thinking about the Undoable,” in G. Natriello’s *School Dropouts: Patterns and Policies* (1987); Rumberger, “A Review of Issues and Evidence,” 1987.

³⁶Barrington and Hendricks, “Differentiating Characteristics,” 1989; Binkley and Hooper, “Statistical Profile,” 1989; E. Farrell, G. Peguero, R. Lindsey, and R. White, “Giving Voice to High School Students: ‘Pressure and Boredom, Ya Know What I’m Sayin’?’” *American Educational Research Journal* 25 (1988): 489–502.

³⁷Mensch and Kandel, “Dropping Out and Drug Involvement,” 1988.

whether they smoked **cigarettes**. The relationship between school outcomes and these student behaviors is examined in the following sections.

Results: Univariate Odds Ratios

In terms of the odds **ratios**, compared with students who always brought the necessary materials and their homework to **class**, students who usually came without pencil or paper or without their homework were over two and a half times more likely to perform below the basic math proficiency **level**, and about two and one-third times more likely to perform below the basic reading level (table 6.1). Similarly, in terms of the odds **ratios**, students who usually came to class without books were four times more likely to perform below the basic math **level**, and three and one-half times more likely to perform below the basic reading level than students who never came without their **books**. Students who usually came to class without these sets of materials (**pencil and paper, books, or homework**) were about four times more likely to drop out of school than students who never came without these materials.

These individual questions were combined into a summary variable designed to indicate the overall preparedness of students when coming to class. Examination of the results using the summary variable **revealed**, not surprisingly, that students who came to class prepared to learn were more likely to achieve the basic proficiency levels and were also less likely to drop **out**. In terms of the odds **ratios**, compared with students who were always **prepared**, students who were usually unprepared were about four to four and one-half times more likely to perform below the basic levels and about nine times more likely to drop **out**. Furthermore, students who were often unprepared were about twice as likely to perform below the basic proficiency levels and more than three and one-half times as likely to drop **out** as those who were never **unprepared**.

Students who were frequently absent or **tardy**, or who frequently cut classes were also more likely to fail at **school**. In terms of the odds **ratios**, students who were absent three or four days in the month before taking the NELS survey were almost one and a half times more likely to perform below the basic math and reading levels and nearly three times more likely to drop **out** than students who missed no **days**. Students who missed five days or more were almost twice as likely to perform below the basic math **level**, about one and a half times as likely to perform below the basic reading **level**, and more than six times as likely to drop **out**, compared with students who never missed **school**.

Skipping class also increased students' likelihood of having poor educational **outcomes**: compared with students who never cut **class**, students who reported that they occasionally cut (**less than once per week**) were twice as likely to perform below the basic proficiency level in math and more than one and a half times as likely to do so in **reading**. In terms of the odds **ratios**, students who cut class more frequently further increased their likelihood of performing below **level**. For example, students who cut class once a week or more were three and one-half times more likely to perform below the basic math level and were almost three times more likely to perform below the basic reading **level**, compared with students who never skipped **class**. In **general**, the more times students were **tardy to class**, the more they increased their risk of performing below the basic proficiency levels and of dropping **out**. Students who were **tardy** three or four times in the month before taking the NELS survey were about one and a half times more likely to perform below both the basic math and reading proficiency levels and were twice as likely to drop **out**, compared with students who reported that they were never **tardy**. Students who were **tardy** at least 10 times in the past month were about three times more likely to perform below the basic proficiency levels, and were about seven times more likely to drop out of school.

Students who were sent to the office for misbehaving during the first semester of school were about twice as likely to perform below the basic proficiency levels in both math and

reading, and they were more than three and one-half times more likely to drop out than students who had not been sent to the **office**. **Furthermore**, in terms of the odds **ratios**, students who had been sent to **the office** more **than** twice in one semester were more than three times as likely to fail to achieve **the basic math proficiency y level**, about two and one-half times as likely to perform **below the basic reading level**, and almost seven and a half times as likely to drop out.

Smokers were also more likely to be at risk than **nonsmokers**. For **example**, student smokers were twice as **likely** to perform below the basic math level as nonsmokers and were more **than** one and a **half** times as likely to perform below the basic reading **level**. **Furthermore**, smokers were seven and one-half times more likely than nonsmokers to drop out of **school**.

Table 6.1—**Odds** ratios of eighth-grade students in **1988** performing below basic levels of reading and mathematics **in 1988** and dropping out of **school, 1988 to 1990**, by student behaviors

| Variable | Below basic mathematics | Below basic reading | Dropped out |
|---|-------------------------|---------------------|-------------|
| Comes w/o pencil/paper | | | |
| Usually vs. never | 2.70** | 2.35** | 4.08** |
| Often vs. never | 1.45** | 1.44** | 1.34 |
| Seldom vs. never | 0.88* | 0.76** | 1.17 |
| Comes w/o books | | | |
| Usually vs. never | 4.10** | 3.49** | 3.90** |
| Often vs. never | 2.43** | 2.22** | 3.08** |
| Seldom vs. never | 0.93 | 0.82** | 1.10 |
| Comes w/o homework | | | |
| Usually vs. never | 2.80** | 2.41** | 4.58** |
| Often vs. never | 1.72** | 1.39** | 3.18** |
| Seldom vs. never | 0.97 | 0.82** | 1.52** |
| Comes unprepared | | | |
| Usually vs. never | 4.63** | 3.96** | 9.32** |
| Often vs. never | 2.25** | 1.84** | 3.71** |
| Seldom vs. never | 1.08 | 0.90 | 1.91** |
| Days missed last month | | | |
| 1–2 vs. none | 1.05 | 0.99 | 1.25 |
| 3–4 vs. none | 1.48** | 1.33** | 2.98** |
| 5 or more vs. none | 1.93** | 1.55** | 6.38** |
| How often cuts class | | | |
| Less than once/wk vs. never | 2.01** | 1.62** | 2.44** |
| Once/wk or more vs. never | 3.62** | 2.82** | 6.44** |
| Smoking habits | | | |
| Does not smoke vs. smokes | 2.17** | 1.67** | 7.54** |
| Days tardy last month | | | |
| 1–2 vs. none | 1.30** | 1.27** | 1.72** |
| 3–4 vs. none | 1.63** | 1.55** | 2.01** |
| 5–10 vs. none | 2.40** | 1.87** | 6.48** |
| 10 or more vs. none | 3.28** | 3.01** | 6.94** |

See footnote at end of table.

Table 6.1—Odds ratios of eighth-grade students in **1988** performing below basic levels of reading and mathematics in **1988** and dropping out of school, **1988** to **1990**, by student **behaviors**—Continued

| Variable | Below basic mathematics | Below basic reading | Dropped out |
|--------------------------------|-------------------------|---------------------|-------------|
| Sent to office for misbehaving | | | |
| Once or twice vs. never | 2.06** | 1.92** | 3.70** |
| More than twice vs. never | 3.28** | 2.56** | 7.48** |

NOTE: * indicates that the odds compared with the reference group are statistically significant at .05 level; ** at .01 level.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988 (NELS:88), "Base Year and First Follow-Up" surveys.

Results: Multivariate Odds Ratios

After keeping **SES**, **race–ethnicity**, and **sex** constant, students who came to class unprepared were more likely to be at risk (table 6.2). In terms of the adjusted odds **ratios**, compared with students who were never unprepared, students who were often unprepared were about twice as likely to perform below the basic math proficiency **level**, more than one and a half times as likely to perform below the basic reading proficiency **level**, and more than three times as likely to drop out. In addition, students who were usually unprepared were more than three and one-half times as likely to perform below the basic math **level**, about three times more likely to perform below the basic reading **level**, and more than eight times more likely to drop out of school than students who were always prepared.

After holding basic demographic variables constant, students who missed **school**, either because they missed whole days or they cut particular **classes**, were more likely to have poor student outcomes than those who came to class more regularly. In terms of the adjusted odds **ratios**, compared with those who did not miss any days of school, students who missed 5 or more days in a month were 77 percent more likely to perform below the basic math proficiency **level** and 41 percent more likely to perform below the basic reading proficiency **level**. Furthermore, they were almost six times more likely to drop out of school. Students who cut classes were also more likely to perform below the basic proficiency levels than those who did not. For example, students who cut class once a week or more were three times as likely to perform below the basic math **level** and more than twice as likely to perform below the basic reading **level** as students who never cut class. Furthermore, students who skipped class frequently were more than six times as likely to drop out as those who did not skip. Even students who skipped less than once a week were more than twice as likely to drop out as students who had never done so.

Student **misbehaviors**—tardiness, smoking, or any misconduct that requires being sent to the office—were all associated with poor student **outcomes**, even after controlling for **SES**, **race–ethnicity**, and **sex**. For example, in terms of the adjusted **odds ratios**, students who had been sent to the office once or twice in the previous semester were 82 percent more likely to **perform** below the basic math **level**, and were 59 percent more likely to **perform** below the basic reading **level** than students who had not been sent to the office. Students who had been sent to the office more

than twice in the previous month were more than six and one-half times as likely to drop out as their peers who had never been tardy or been sent to the office.

Table 6.2—**Adjusted odds ratios†** of eighth-grade students in 1988 performing below basic levels of reading and mathematics in 1988 and dropping out of school, 1988 to 1990, by student behaviors

| Variable | Below basic mathematics | Below basic reading | Dropped out |
|-----------------------------|-------------------------|---------------------|-------------|
| Comes w/o pencil/paper | | | |
| Usually vs. never | 2.42** | 2.02** | 3.79** |
| Often vs. never | 1.40** | 1.36** | 1.34 |
| Seldom vs. never | 0.91 | 0.77** | 1.23 |
| Comes w/o books | | | |
| Usually vs. never | 3.47** | 2.78** | 3.03** |
| Often vs. never | 2.19** | 1.94** | 2.55** |
| Seldom vs. never | 0.98 | 0.87* | 1.18* |
| Comes w/o homework | | | |
| Usually vs. never | 2.46** | 2.06** | 3.79** |
| Often vs. never | 1.59** | 1.26** | 2.77** |
| Seldom vs. never | 0.98 | 0.84* | 1.54** |
| Comes unprepared | | | |
| Usually vs. never | 3.77** | 3.05** | 8.38** |
| Often vs. never | 2.10** | 1.65** | 3.27** |
| Seldom vs. never | 1.08 | 0.90 | 1.92** |
| Days missed last month | | | |
| 1–2 vs. none | 1.06 | 1.02 | 1.26 |
| 3–4 vs. none | 1.40** | 1.27** | 2.97** |
| 5 or more vs. none | 1.77** | 1.41** | 5.76** |
| How often cuts class | | | |
| Less than once/wk vs. never | 1.88** | 1.48** | 2.24** |
| Once/wk or more vs. never | 3.09** | 2.30** | 6.18** |

See footnote at end of table.

Table 6.2—Adjusted odds ratios[†] of eighth-grade students in 1988 performing below basic levels of reading and mathematics in 1988 and dropping out of school, 1988 to 1990, by student behaviors—Continued

| Variable | Below basic mathematics | Below basic reading | Dropped out |
|---------------------------------------|-------------------------|---------------------|-------------|
| Smoking habits | | | |
| Does not smoke vs. smokes | 2.15** | 1.66** | 7.85** |
| Days tardy last month | | | |
| 1–2 vs. none | 1.24** | 1.19** | 1.66** |
| 3–4 vs. none | 1.46** | 1.36** | 1.99** |
| 5–10 vs. none | 2.14** | 1.65** | 6.67** |
| 10 or more vs. none | 2.61** | 2.31** | 6.75** |
| Sent to office for misbehaving | | | |
| Once or twice vs. never | 1.82** | 1.59** | 3.50** |
| More than twice vs. never | 2.73** | 1.94** | 6.52** |

[†] Odds ratios after controlling for the student's socioeconomic status, race–ethnicity, and sex.

NOTE: * indicates that the odds compared with the reference group are statistically significant at .05 level; ** at .01 level.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988 (NELS:88), "Base Year and First Follow-Up" surveys.

Summary

School failure typically does not happen in a single day or year, but is a culmination of a gradual process of school disengagement over time. Poor attendance, cutting class, disruptive behaviors, and other actions are part of a cluster of student behaviors that indicate the student's disinterest in school. These behaviors are a part of the process that may eventually lead to poor achievement, early school withdrawal, or both.

In this report, several self-reported student behaviors in the eighth-grade were associated with school failure in the middle grades. After holding constant sex, race–ethnicity, and socioeconomic status, students who regularly came to school unprepared, who cut classes, who were frequently tardy or absent, or who smoked regularly were more likely than other students to score below basic proficiency levels in mathematics and reading and to drop out between the 8th and the 10th grades. Furthermore, students who were often sent to the office for misbehavior were also more likely to have poor school outcomes.

Chapter 7

Teacher Perceptions

In many instances, one would expect that the person best able to judge whether a student was “at risk” would be the student’s teacher. For example, Kagan, in her study of elementary teachers’ identification of potentially at-risk students, found that teachers could reliably identify at-risk students with scores on standardized tests, descriptions of the student’s home environment, and classroom behaviors reflecting aggression or withdrawal.³⁸

However, research has also shown that teacher perceptions themselves can be powerful influences on student outcomes.³⁹ Studies of teacher expectation effects indicate that past perceptions of student behaviors and achievement can lead to current expectations of student behavior or achievement. These expectations can then be communicated to the student through the teacher’s interaction with the student, resulting in student behavior and achievement that may eventually conform with these teacher expectations—the familiar “self-fulfilling prophecy.”

Although teachers surveyed in NELS:88 were not asked to categorize students as being at risk, they were asked to identify those sampled students who were performing below their ability level, who were frequently absent or tardy, or who were inattentive—characteristics that are usually used to define those who are at risk of school failure. Relationships between poor educational outcomes and these student characteristics—as perceived by the students’ teachers—are described in the section below.

Results: Univariate Odds Ratios

In terms of the simple odds ratios, students who were recalled by their teachers as being frequently absent and those who were thought of as passive were more than one and a half times as likely as other students to perform below the basic proficiency levels on both the math and reading achievement tests (table 7.1). Students who were rated as frequently disruptive were about twice as likely as other students to perform below the basic proficiency levels. Furthermore, students whose teachers stated that they did not apply themselves in class were at risk of poor student performance. Specifically, students whose teachers felt that they were inattentive, frequently tardy to class, performing below ability, and rarely completing their assigned homework were about three times as likely as other students to perform below the basic math proficiency level, and more than twice as likely to perform below the basic proficiency level in reading.

Teacher perceptions of student behaviors were also associated with dropping out of school. Those students who teachers felt were inattentive or performing below ability were about four times more likely to drop out than those who teachers felt paid attention or performed up to their potential. In addition, students who, according to their teachers, rarely completed their homework were almost five times more likely than those who completed their homework to drop out. In terms of the simple odds ratios, students who were reported by their teachers as being frequently tardy were more than five times as likely as other students to drop out, and those who were reported as being frequently absent were seven times more likely to drop out.

³⁸D.Kagan, “How Do Teachers Define Students At-Risk?” *The Clearing House* 61(March 1988): 320–324.

³⁹For a review, see J.Dusek, *Teacher Expectations* (London: Lawrence Erlbaum Associates, 1985).

Table 7.1—**Odds** ratios of eighth-grade students in **1988** performing below basic levels of reading and mathematics in **1988** and dropping out of **school, 1988 to 1990**, by teacher perceptions

| Variable | Below basic mathematics | Below basic reading | Dropped out |
|--|-------------------------|---------------------|-------------|
| Student is passive Yes vs. no | 1.67** | 1.55** | 2.15** |
| Student is frequently disruptive Yes vs. no | 2.27** | 1.98** | 2.59** |
| Student is inattentive Yes vs. no | 2.78** | 2.24** | 3.79** |
| Student performs below ability Yes vs. no | 2.87** | 2.25** | 4.09** |
| Student rarely completes homework Yes vs. no | 3.02** | 2.39** | 4.81** |
| Student is frequently tardy Yes vs. no | 2.87** | 2.39** | 5.23** |
| Student is frequently absent Yes vs. no | 1.85** | 1.63** | 7.04** |

NOTE: * indicates that the odds compared with the reference group are statistically significant at .05 level; ** at .01 level.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988 (NELS:88), "Base Year and First Follow-Up" surveys.

Results: Multivariate Odds Ratios

Because the variables discussed above may have some relationship to socioeconomic status, race—ethnicity, or sex (in other words, students of lower SES may be perceived to be more disruptive than students of high SES, or males may be remembered as being more absent from class than females), the increased likelihood of some of these students to be at risk may be due in part to their SES or sex, rather than their perceived characteristics. Table 7.2 presents the odds ratios for these same factors adjusted for socioeconomic status, race—ethnicity, and sex.

In terms of the adjusted odds ratios, students who were seen by their teachers as being passive were about 50 percent more likely than other students to perform below the basic math level and about 35 percent more likely to perform below the basic reading level, after adjusting for SES, race—ethnicity, and sex. Students who teachers felt were disruptive were almost twice as likely to perform below the basic math level, and were more than one and one-half times as

likely to perform below the basic reading **level**. After adjusting for basic **demographics**, the students who were frequently absent from class were about one and one-half times more likely than **others** to perform below the basic **levels** on both the math and reading **tests**.

Holding **SES**, race–ethnicity and sex **constant**, students who were inattentive or frequently **tardy** were more than twice as likely as those without these characteristics to **perform** below the basic math **level**, and **slightly less** than twice as likely to perform below the basic reading **level**. Similarly, after adjusting for basic **demographics**, students who teachers said were performing **below their ability** and **rarely** completing their homework were almost two and one-half times more likely to **perform** below the basic math **level** and more than one and three-quarters times as likely to **perform** below the basic **level** in reading.

After holding **SES**, race–ethnicity, and sex **constant**, students who teachers felt performed below ability and those who were frequently tardy were more than three times as likely in terms of odds as others to drop out of **school**; those who were frequently absent were almost five times as likely as others to drop out. Students **noted** by their teachers as rarely completing their homework were almost six times more likely to drop out. After keeping basic **demographics constant**, students who were remembered as being frequently disruptive were more than eight times as likely to drop out as their non-disruptive peers.

Table 7.2—Adjusted odds ratios[†] of eighth-grade students in 1988 performing below basic levels of reading and mathematics in 1988 and dropping out of school, 1988 to 1990, by teacher perceptions

| Variable | Below basic mathematics | Below basic reading | Dropped out |
|---|-------------------------|---------------------|-------------|
| Student is passive Yes vs. no | 1.48** | 1.35** | 2.42* |
| Student infrequently disruptive Yes vs. no | 1.94** | 1.60** | 8.37** |
| Student is inattentive Yes vs. no | 2.38** | 1.82** | 1.90** |
| Student performs below ability Yes vs. no | 2.46** | 1.84** | 3.11** |
| Student rarely completes homework Yes vs. no | 2.49** | 1.84** | 5.82** |
| Student is frequently tardy Yes vs. no | 2.29** | 1.83** | 3.25** |
| Student is frequently absent Yes vs. no | 1.63** | 1.43** | 4.87** |

† Odds ratios after controlling for the student's socioeconomic status, race–ethnicity, and sex.

NOTE: * indicates that the odds compared with the reference group are statistically significant at .05 level; ** at .01 level.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988(NELS:88), "Base Year and First Follow-Up" surveys.

Summary

While teachers in the NELS:88 Base Year Survey were not asked to specifically identify at-risk students, their perceptions of the student closely corresponded with the student's at-risk status. Students who teachers characterized as **passive**, **frequently disruptive**, **inattentive**, or **performing below their ability level** were more likely to have poor educational **outcomes**. Students who were reported by their teachers as **being frequently tardy**, **absent**, or **as often failing to complete homework**, were also more likely to have poor basic skills and to drop out.

Chapter 8

School Environment

Ekstrom and Mann found that students who live in a large city are at greater educational risk than students in rural **communities**.⁴⁰ Moreover, Fine found that at-risk students tend to be clustered in the same **schools**. This clustering contributes to continued failure due to proportionally lower funding levels in schools where students more often take half-credit remedial courses or need extra help from **counselors, teachers, and aides**, as well as due to low morale among staff **members**. Fine cited a 1985 survey that showed that two-thirds of the teachers in the school under study felt that the staff and school administrators took little **interest** in their work in the **classroom**. Fine also noted that the school she studied was extremely overcrowded—its student population represented 144 percent of its **capacity**. Finally, Fine identified the ethnic composition of the school's staff as a contributing factor to its limited success in graduating students. Although the student population consisted primarily of black and Hispanic **students**, the school's administrative staff was all **white**, its teaching staff was mostly white with some Hispanics and a few **blacks**, and most of the teaching aides were black women who received low pay and little respect for their **work**. Fine believed the social stratification of the school did little to encourage students' wavering belief in the power of education to overcome the barrier of poverty.⁴¹

Results: Univariate Odds Ratios

In terms of the simple odds ratios, eighth graders in 1988 who attended urban schools were 24 percent more likely to perform below the basic math level and 40 percent more likely to perform below the basic reading level than students who attended suburban eighth grade schools (table 8.1). Urban students were also 62 percent more likely to drop out of school than their suburban **counterparts**.

Students who attended schools where the student body was largely minority (**more** than 20 percent **minority**) and poor were more likely to **perform** below the basic proficiency levels and were also more likely to **drop out**, when compared with students who attended schools populated by mostly white students and where few students qualified for the federal government's free or reduced lunch **program**. For example, in terms of the simple odds ratios, compared with students attending schools with a small minority population (0 percent to 5 percent), students from schools with a 21 percent to 40 percent minority population were about one-third more likely to perform below the basic math and reading proficiency **levels**; students attending schools with a minority population of over 60 percent were more than two and a quarter times more likely to perform below the basic proficiency levels and almost three and a half times more likely to drop **out**.

In **general**, a similar relationship was found when examining student performance and the proportion of poor students in the schools the students attended (**as measured** by the percentage of students within the schools receiving free or reduced lunches). For example, compared with students attending schools where none of the students were **poor**, students from schools where 11 percent to 30 percent of the students were poor were about 51 percent more likely to perform below the basic proficiency **levels**; students attending schools where more than 75 percent of the

⁴⁰Ekstrom et al., "Who Drops Out and Why?" 1989; Mann, "Can we Help Dropouts?" 1987.

⁴¹Fine, "Why Urban Adolescents Drop Into and Out of School," 1987.

students were poor were more than three and one-half times as likely to perform below the basic levels and more than seven times as likely to drop out.

A number of composite variables were created from the **NELS:88** school administrator **questionnaire**. These variables measured school discipline **problems**, **level** of teacher **engagement**, academic pressure placed on the **students**, security measures undertaken by the **school**, and the level of discipline and control that the school sought to impose on the students and their learning **environment**.⁴² Perhaps not surprisingly, in **terms** of the simple odds **ratios**, students from schools with fewer **problems**, fewer security measures (**perhaps** because of a smaller perception of **need**), greater teacher **engagement**, and higher academic expectations generally had better outcomes than did students from schools where the opposite was **true**.

Teacher **engagement**, which reflects teacher morale and **teachers'** relationships to both the student body and the **administration**, was related to student test **performance** (table 8.1). Students from schools with low teacher engagement were about 20 percent more likely than students from schools with moderate teacher engagement to perform below the basic level of proficiency on both the math and reading **tests**. Students attending schools where there was an unusually high emphasis on academics were about one-third less likely than their peers in schools with a moderate amount of academic emphasis to perform below the basic math level and were also about one-half as likely to drop out. Students attending schools with a low school security (**those** taking fewer overt steps to make the campus safe and **secure**) were about one-third less likely than students from schools with a moderate level of school security to perform below the basic proficiency **levels**; they were also about 60 percent less likely to drop out.

⁴²For more detailed descriptions of these composite scale variables, see appendix A.

Table 8.1—Odds ratios of eighth-grade students in **1988** performing below basic **levels** of reading and mathematics in **1988** and dropping out of **school, 1988 to 1990**, by school **environment**†

| Variable | Below basic mathematics | Below basic reading | Dropped out |
|--|-------------------------|---------------------|-------------|
| School size | | | |
| 1–399 vs. 600–799 | 0.77** | 0.85 | 1.04 |
| 400–599 vs. 600–799 | 0.95 | 1.01 | 1.09 |
| 800–1199 vs. 600–799 | 0.92 | 0.99 | 1.49 |
| 1200+ vs. 600–799 | 1.04 | 1.26 | 1.30 |
| School urbanicity | | | |
| Urban vs. suburban | 1.24** | 1.40** | 1.62* |
| Rural vs. suburban | 1.09 | 1.06 | 1.46 |
| Percent minority in school | | | |
| 6–20 vs. 0–5 | 1.16 | 0.91 | 1.87* |
| 21–40 vs. 0–5 | 1.34** | 1.29** | 1.67** |
| 41–60 vs. 0–5 | 1.80** | 1.61** | 1.58* |
| 61+ vs. 0–5 | 2.37** | 2.40** | 3.47** |
| Percent on free or reduced price lunch program | | | |
| 1–lo vs. 0 | 1.18 | 1.15 | 2.89* |
| 11–30 vs. 0 | 1.55** | 1.51** | 2.56** |
| 31–74 vs. 0 | 2.25** | 2.07** | 3.79** |
| 75+ vs. 0 | 3.39** | 3.67** | 7.34** |
| School problems | | | |
| Low vs. moderate | 0.51** | 0.60** | 0.10** |
| High vs. moderate | 1.50** | 1.40** | 1.79** |
| Teacher engagement | | | |
| Low vs. moderate | 1.19* | 1.19** | 1.05 |
| High vs. moderate | 0.79* | 0.72** | 0.77 |
| Academic press | | | |
| Low vs. moderate | 1.19* | 1.24** | 1.21 |
| High vs. moderate | 0.65** | 0.77** | 0.53** |
| School security | | | |
| Low vs. moderate | 0.77* | 0.70** | 0.43* |
| High vs. moderate | 1.13 | 1.13 | 1.06 |

See footnotes at end of table.

Table 8.1—**Odds** ratios of eighth-grade students in 1988 performing below basic levels of reading and mathematics in 1988 and dropping out of school, 1988 to 1990, by school **environment**†—Continued

| Variable | Below basic mathematics | Below basic reading | Dropped out |
|--|-------------------------|---------------------|-------------|
| School discipline | | | |
| Low vs. moderate | 1.14 | 1.20* | 1.08 |
| High vs. moderate | 0.92 | 0.93 | 0.65 |
| School reading level | | | |
| Low vs. moderate | 2.39** | 2.29** | 1.69** |
| High vs. moderate | 0.40** | 0.40** | 0.38 |
| School math level | | | |
| Low vs. moderate | 2.55** | 2.10** | 2.13** |
| High vs. moderate | 0.43** | 0.58** | 0.32** |
| School combined math and reading level | | | |
| Low vs. moderate | 2.47** | 2.16** | 2.20** |
| High vs. moderate | 0.40** | 0.49** | 0.36* |

† The environment of the student's eighth-grade school.

NOTE: * indicates that the odds compared with the reference group are statistically significant at .05 level; ** at .01 level.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988 (NELS:88), "Base Year and First Follow-Up" surveys.

Results: Multivariate odds Ratios

Many of these school-level variables may also be associated with the student's demographic background. In terms of the adjusted odds ratios, minority students or students from low socioeconomic backgrounds are more likely to be found in large, urban schools, with higher percentages of minority students, poor students, or both. Consequently, any effect of these school-level variables on student outcomes may be confounded with the influence of the individual student's demographic background. Table 8.2, therefore, presents the odds ratios for the school-level variables controlling for student background characteristics.

Holding constant basic demographic characteristics, eighth-graders within schools with large minority populations (more than 61 percent) were over 50 percent more likely to have low basic skills in mathematics than were students in schools with low-minority populations (0 percent to 5 percent). In terms of the adjusted odds ratios, students in high-minority schools were also 30 percent more likely to have low basic skills in reading and were over two and one-half times more likely to be dropouts by the 10th grade. Students in schools with a high degree of emphasis on academics were less likely than other students to have low basic skills. Eighth-graders in these schools were 27 percent less likely to have low mathematics skills and were 13

percent less likely to have low reading skills. There was no significant increase or decrease in the dropout rates in schools that put a relatively high emphasis on academics.

Students from relatively low-achieving schools—**those** schools at the lower quartile of **achievement** in mathematics and reading—were **more likely** themselves to be low **achieving**. Compared **with** students in schools with moderate overall levels of achievement in **mathematics**, students in low-achieving schools were twice as likely to be below basic proficiency levels in mathematics and **45** percent more likely to be below the basic level in **reading**. Students from high-achieving schools were about **53** percent less likely to be dropouts than students from schools **with** a moderate level of math achievement.

Table 8.2—Adjusted odds ratios¹ of eighth-grade students in 1988 performing below basic levels of reading and mathematics in 1988 and dropping out of school, 1988 to 1990, by school environment²

| Variable | Below basic mathematics | Below basic reading | Dropped out |
|---|-------------------------|---------------------|-------------|
| School size | | | |
| 1–399 vs. 600–799 | 0.81* | 0.92 | 1.04 |
| 400–599 vs. 600–799 | 0.95 | 1.01 | 1.08 |
| 800–1,199 vs. 600–799 | 0.88 | 0.95 | 1.49 |
| 1,200+ vs. 600–799 | 0.97 | 1.16 | 1.26 |
| School urbanicity | | | |
| Urban vs. suburban | 0.97 | 1.05 | 1.29 |
| Rural vs. suburban | 0.91 | 0.88 | 0.99 |
| Percent minority in school | | | |
| 6–20 vs. 0–5 | 1.19* | 0.89 | 2.15** |
| 21–40 vs. 0–5 | 1.19* | 1.07 | 1.73** |
| 41–60 vs. 0–5 | 1.38** | 1.12 | 1.35 |
| 61+ vs. 0–5 | 1.52** | 1.30** | 2.71** |
| Percent on free or reduced price lunch program | | | |
| 1–10 vs. 0 | 1.10 | 1.07 | 2.46** |
| 11–30 vs. 0 | 1.20 | 1.14 | 1.60 |
| 31–74 vs. 0 | 1.38** | 1.18 | 1.70 |
| 75+ vs. 0 | 1.57** | 1.51** | 2.55** |

See footnotes at end of table.

Table 8.2—Adjusted odds ratios¹ of eighth-grade students in 1988 performing below basic levels of reading and mathematics in 1988 and dropping out of school, 1988 to 1990, by school environment²—Continued

| Variable | Below basic mathematics | Below basic reading | Dropped out |
|--|-------------------------|---------------------|-------------|
| School problems | | | |
| Low vs. moderate | 0.61* | 0.74 | 0.14** |
| High vs. moderate | 1.25** | 1.14* | 1.37 |
| Teacher engagement | | | |
| Low vs. moderate | 1.12 | 1.11 | 0.90 |
| High vs. moderate | 0.95 | 0.88 | 1.01 |
| Academic press | | | |
| Low vs. moderate | 1.05 | 1.09 | 0.97 |
| High vs. moderate | 0.73** | 0.87* | 0.64 |
| School security | | | |
| Low vs. moderate | 0.86 | 0.79* | 0.50* |
| High vs. moderate | 1.05 | 1.03 | 1.04 |
| School discipline | | | |
| Low vs. moderate | 1.03 | 1.08 | 0.91 |
| High vs. moderate | 0.90 | 0.90 | 0.63 |
| School reading level | | | |
| Low vs. moderate | 1.85** | 1.65** | 1.12 |
| High vs. moderate | 0.50** | 0.52** | 0.68 |
| School math level | | | |
| Low vs. moderate | 2.01** | 1.45** | 1.44 |
| High vs. moderate | 0.51** | 0.77** | 0.47** |
| School combined math and reading level | | | |
| Low vs. moderate | 1.93** | 1.51** | 1.48* |
| High vs. moderate | 0.49** | 0.65** | 0.59 |

¹ Odds ratios after controlling for the student's socioeconomic status, race–ethnicity, and sex.

² The environment of the student's eighth grade school.

NOTE: * indicates that the odds compared with the reference group are statistically significant at .05 level; ** at .01 level.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988 (NELS:88), "Base Year and First Follow-Up" surveys.

Summary

There is a great body of literature on the effects of the characteristics of schools on educational **outcomes**. This chapter examined several school-level variables that were associated with student's at-risk status that were independent of the student's demographic **characteristics**.⁴³ For **example**, after controlling for basic demographic characteristics, eighth-graders who attended schools with large minority populations or attended schools with a higher incidence of school problems were more likely to have poor school **outcomes**. Furthermore, after controlling for **students'** demographic **characteristics**, eighth-graders in schools that put a greater emphasis on academic achievement were less likely than students from other schools to **perform** below basic proficiency levels in mathematics and reading. However, more emphasis on academics did not seem to have an impact (either positive or negative) on the student's likelihood of dropping **out**.

⁴³The methodology employed in this analysis is not the most appropriate for studying school **effects**. These effects are hierarchical in **nature**, with students nested within classrooms that are then nested within **schools**. This school **effects'** process requires special methods to adequately model its complex variance **structure**. For more **information**, see S. Raudenbush and A. Bryk, "A Hierarchical Model for Studying School Effects," *Sociology of Education* (1987).

Chapter 9

Discussion

This **report**, using data from the NELS:88 Base Year and First Follow-Up **Surveys**, presented factors that are associated with students being at risk for school failure—either by failing to learn in school or by dropping out of school altogether. Many of the basic demographic factors **taken** one at a time followed well-known patterns. For example, **black**, **Hispanic**, and Native American students were more likely to be at risk of school failure than were white **students**. However, after controlling for sex and **SES level**, minority students were no more likely to drop out of school than were white students. In **contrast**, even after controlling for these **variables**, **Hispanic**, **black**, and Native American students were more likely than white students to have low basic skills.

Other variables also had an association with students being at risk for school **failure**. Controlling for basic demographic characteristics, the following groups of students were found to be more likely, in terms of the odds ratios, to have poor basic skills in the 8th grade and to have dropped out between the 8th and the 10th grades:

- Students from single-parent families, students who were overage for their peer **group**, or students who had frequently changed schools;
- Eighth-graders whose parents were not actively involved in the student's **school**, students whose parents never talked to them about school-related **matters**, or students whose parents held low expectations for their child's future educational **attainment**;
- Students who repeated an earlier **grade**, students who had histories of poor grades in mathematics and **English**, or students who did little **homework**;
- Eighth-graders who often came to school unprepared for **classwork**, who frequently **cut class**, or students who were otherwise frequently tardy or absent from **school**;
- Eighth-graders whose teachers thought they were **passive**, frequently **disruptive**, **inattentive**, or students whose teachers thought they were **underachievers**; and
- Students from schools with large minority populations.

It is important to keep in mind that while many of the risk factors examined in this **report** were associated with the three measures of school failure, it is not possible to say with any certainty whether these risk factors “**caused**” school failure. For example, it is difficult to determine with these data whether parental expectations preceded or followed the student's poor performance in **school**. Low expectations may be based on a realistic assessment of the student's educational and behavioral **performance**. In addition, students who are now overage may have performed less ably than other students in the past and **were**, thus, retained in **grade**. Grade retention itself may not have caused the later poor performance but may be only associated with prior (and continued) poor performance.

Regardless of whether school failure was caused by these risk **factors**, this list of factors **nevertheless** provides researchers and policy analysts with an initial look at the characteristics of eighth-grade students who are likely to leave school academically disadvantaged—by either leaving school **prematurely**, or by leaving school **on time**, but with poor academic **skills**.

However, while a wide variety of variables were examined in this analysis, there still may be other factors linked to school failure that are associated with the student's community or school experiences that were not examined here. This analysis makes no claim to exhaust the potential of the NELS:88 database for exploring issues related to at-risk youth.

Furthermore, while multivariate techniques were used in this analysis to control for the student's sex, race–ethnicity, and socioeconomic status, the basic purpose of this report has remained descriptive. That is, the purpose of the report has been to describe the relative association of several at-risk factors independent of the student's basic demographic characteristics. While a formal model of the educational attainment process was implicit in the manner in which the data were presented in this report, no formal test of this model was conducted here. Such an analysis might determine the relative importance of sets of at-risk factors (for example, whether family background characteristics are more or less important than school characteristics in determining at-risk status).⁴⁴

Moreover, it is possible that different combinations of risk factors may lead students to be especially at risk. That is, there may be interactions among the risk factors examined in this analysis that were not uncovered in this report due to the methods chosen to analyze, present, and interpret the data. For example, it is possible that coming from a single-parent family has a more deleterious effect on the educational outcomes of low-socioeconomic students than it has on high-socioeconomic students.⁴⁵ These two at-risk factors (single-parent family and low-SES background) in combination might have a larger effect than the cumulative influence of each in isolation. However, by choosing in this report to examine a wide variety of variables, it was difficult to conduct an in-depth analysis of all the possible combinations of variables. Discovering which combinations of factors put students most at risk and/or determining the relative importance of family, school, and community at-risk factors remains a subject for further research using the NELS:88 database. Further analyses of the NELS:88 Base Year and First Follow-Up data should provide additional insights into the nature of the at-risk population.

⁴⁴ A danger of such an analysis is overcontrolling; that is, with 50 or more variables in the equation, simple interpretation of the impact of any single variable becomes difficult.

⁴⁵ Milne, Myers, Rosenthal, and Ginsburg, in their study of achievement and test scores using data from the Sustaining Effects Study of Title I and the High School and Beyond Study, found that the negative effects of living in a single-parent family were almost entirely mediated by other factors, particularly family income.

Appendix A

Data and Methodology

Data

Estimates in this analysis were based on the eighth graders surveyed in the National Education Longitudinal Study (NELS:88). The estimates in tables 2.1, 2.2, and 2.3 were based on the entire student sample in the base-year survey (24,599 students). The estimates in subsequent tables were based on the students who had parent data (22,651 students). Consequently, there may be a slight bias in the ratios reported in the tables of chapters 3 through 8 due to the fact that students whose parents did not return a questionnaire were more likely to have low basic skills and to have dropped out (table A1). This bias should result in an underreporting of the size of differences between some subgroups.

Table A1—Percentage of all sampled students and students with parent data performing below basic levels of reading and mathematics in 1988 and dropping out of school, 1988 to 1990

| Variable | Below basic mathematics | Below basic reading | Dropped out |
|--------------------------------------|-------------------------|---------------------|-------------------|
| All students (N=24,599) | 18.8 (N=21,908) | 13.7 (N=22,676) | 6.0 (N=17,424) |
| Students with parent data (N=22,651) | 18.0 (N=19,878) | 12.9 (N=20,576) | 5.6 (N=16,328) |

The samples for these tables were further limited to students with nonmissing values on the mathematics proficiency variable, the reading proficiency variable, and the dropout variable. Because the software program used, PCCARP, has no provision for missing data (no missing value codes are allowed), three separate data sets were created—one for each dependent variable. That is, the estimates in column one of tables 2.1 through 8.2 were based on a data set containing students with nonmissing mathematics proficiency scores; the estimates in column two of tables 2.1 through 8.2 were based on students with nonmissing reading proficiency scores; and the estimates in column three of tables 2.1 through 8.2 were based on students with nonmissing dropout data. Furthermore, the base year student weight was used for the analysis of mathematics and reading proficiency scores while a special panel weight was used for the analysis of dropping out. This panel weight was developed for those students in both the base year and first follow-up surveys. Appendix B presents the unweighted sample sizes for these tables and the standard errors for tables 2.1 through 8.2.

Variables

Most of the variables used in this report are taken directly from the public use data file for the NELS:88 Base Year Survey. The exception is the dropout indicator variable, which is from the NELS:88 First Follow-Up Survey. The coding of this variable, along with the coding of the mathematics and reading proficiency variables, is shown in table A2.

Table A2—Outcome variables

| Variable label | Variable name | Original coding | Recoding |
|-------------------------|---------------|--|--|
| Dropout status | FU1DROP2 | 1 = Not a dropout 2 = Dropout 3 = Stopout D = Deceased O = Out of country N = Nonexistent student X = Student not in 1FU 9 = Missing/unknown | 0 = 1,3 $\overline{1} = 2$ Missing = D to 9 |
| Mathematics proficiency | BYTXPRO | 1 = Below level 1 2 = Level 1, but not level 2 or 3 3 = Level 1 and 2, but not level 3 4 = Proficient at all 3 levels 5 = Did not fit model 9 = Missing | $\overline{1} = 1$ 0 = 2, 3, 4 $\overline{9} = 5, 9$ |
| Reading proficiency | BYTXPRO | 1 = Below level 1 2 = Level 1, but not level 2 3 = Level 2 5 = Did not fit model 9 = Missing | $\overline{1} = 1$ 0 = 2, 3 $\overline{9} = 5, 9$ |

Several variables in this analysis have been recoded from the original variables on the NELS:88 base year data set, while other variables in this analysis were composites of NELS:88 base year variables. These variables are described below in table A3. The socioeconomic status variable was a composite created by the National Center for Education Statistics, averaging the nonmissing values of five standardized components: father's and mother's educational levels, father's and mother's occupations, and family income. The parent questionnaire was the primary source of these components; for students without parent data (8.1 percent), student data was substituted.

Table A3—Composite and recoded variables

| Variable label | Variable name | Original coding | Description |
|--------------------|--------------------|---|---|
| Family composition | NEWFCOMP | <p>1 = Mother and father 2 = Mother and male guardian 3 = Father and female guardian 4 = Mother only 5 = Father only 6 = Other</p> | Recoded so that $1 = 4,5$ $0 = 1,2,3,6$ |
| Overage | BIRTHMO BIRTHYR | <p>Month of birth Year of birth</p> | <p>1 = If the student was born in 1972 or if the student was born in Jan. -Aug. of 1973.</p> <p>0 = If the student was born in 1974 or 1975, or if the student was born in Sept.-Dec. 1973.</p> |

A number of school scale composites were also created for this analysis. The responses supplied by school administrators to several items were combined to create these scales. Schools were then ordered by their scale score and divided into three categories: high (top quartile), medium (from the 25th to the 75th percentile), or low (bottom quartile). The table below presents the created scales and the input variables for each. For each scale, factor and reliability analyses were performed to test the feasibility of combining the items into a scale. Cronbach's alpha statistic, shown in the table below, is a measure of the internal consistency of a scale and is based on the average correlation of items with the scale; it has a possible range of zero to one.

Table A4—Composite variables for school environment

| Scale | Source and description of item | | Alpha statistic |
|---------------------------------------|--------------------------------|---|-----------------|
| Parental involvement in PTA/school | byp59a | Belongs to PTA | .74 |
| | byp59b | Attends PTA meetings | |
| | byp59c | Takes part in PTA activities | |
| | byp59d | Acts as volunteer at school | |
| School problems | bysc49a | Student tardiness | .88 |
| | bysc49b | Student absenteeism | |
| | bysc49c | Student class cutting | |
| | bysc49d | Physical conflicts among students | |
| | bysc49e | Robbery or theft | |
| | bysc49f | Vandalism of school property | |
| | bysc49g | Student use of alcohol | |
| | bysc49h | Student use of illegal drugs | |
| | bysc49i | Student possession of weapons | |
| | bysc49j | Physical abuse of teachers | |
| | bysc49k | Verbal abuse of teachers | |
| | | | |
| Academic press | bysc47c: | Students place a priority on learning | .71 |
| | bysc47e: | Teachers at this school encourage students to do their best | |
| | bysc47f: | Students are expected to do homework | |
| | bysc47o | Students face competition for grades | |
| | | | |
| Teacher engagement | bysc47a* | There is conflict between teachers and administrators | .73 |
| | bysc47e | Teachers at this school encourage students to do their best | |
| | bysc47g | Teacher morale is high | |
| | bysc47h* | Teachers have negative attitude about students | |
| | bysc47i* | Teachers find it difficult to motivate students | |
| | bysc47m | Teachers take the time to respond to students' individual needs | |
| | | | |
| School security | bysc48a | Visitors required to sign in at the main office | .75 |
| | bysc48b | Hall passes required to visit library | |
| | bysc48c | Hall passes required to visit lavatory | |
| | bysc48d | Hall passes required to visit office | |
| | bysc48e | Hall passes required to visit counselor | |
| | bysc48j | Certain forms of student dress forbidden | |
| | bysc48k | Students prohibited from leaving school or school grounds during school hours | |
| | | | |

Table A4—Composite variables for school environment (continued)

| Scale | Source and description of item | Alpha Statistic |
|----------------------|--|-----------------|
| Classroom discipline | | .82 |
| | bysc47b Discipline is emphasized at this school | |
| | bysc47d The classroom environment for students is structured | |
| | bysc47f Students are expected to do homework | |
| | bysc47j The school day for students is structured | |
| | bysc47k Deviation by students from school rules is not tolerated | |

*These items were reverse-coded for consistency of scaling.

Methodology

The statistics reported in tables 1.2 and tables 2.1, 3.1, 4.1 and so on through 8.1 in subsequent chapters are the simple odds ratios for each comparison listed. For example, the odds ratio for math proficiency comparing males to females is 0.81.

This ratio can be calculated in the following manner:

1. The proportion of males below basic proficiency = 0.2045; odds = 0.2045/(1-0.2045) = 0.257. The proportion of females below basic proficiency = 0.1716; odds = 0.1716/(1-0.1716) = 0.207.
2. The odds ratio of females vs. males = 0.207/0.257 = 0.805.

In simple terms this means that being female rather than male decreases a student's odds of being below basic proficiency in mathematics by a factor of 0.81—or, in other words, females are about 19 percent less likely to drop out than are males.

One can also use logistic regression to calculate these odds ratios. The logistic model is generally written in terms of the odds in the following manner:

$$\log\left(\frac{\text{Prob(event)}}{\text{Prob(no event)}}\right) = B_0 + B_1X_1 + \dots + B_pX_p$$

or alternatively:

$$\frac{\text{Prob(event)}}{\text{Prob(no event)}} = e^{B_0 + B_1X_1 + \dots + B_pX_p}$$

For example, using logistic regression one can regress math proficiency (coded 1,0) on sex (coded 1,0). This model can be written as

$$\frac{\text{Prob(below basic proficiency)}}{\text{Prob(above basic proficiency)}} = e^{B_0 + B_{\text{sex}}}$$

Fitting this model with PCCARP, a logistic regression program that takes into account the complex sampling design of NELS:88,⁴⁶ results in

| Variable | B | S.E. | Wald statistic (t-test) | Sig. |
|----------|--------|-------|-------------------------|--------|
| Constant | -1.359 | 0.037 | 36.26 | <0.001 |
| Sex | -0.216 | 0.043 | 5.02 | <0.001 |

The odds ratio for the comparison of females to males for math proficiency is calculated by

$$\hat{\psi} = e^{-0.216} = 0.805,$$

or the same odds ratio calculated above. The significance of this odds ratio is identical to the significance of the t-test for the B coefficient upon which it is based.

Obviously, using logistic regression to calculate these simple odds ratios is not an efficient procedure. However, using logistic regression, one can also calculate the odds ratios for some comparison *controlling for other variables*. For example, in table 1.3, the model has been expanded to be

$$\frac{\text{Prob(below basic prof.)}}{\text{Prob(above basic prof.)}} = e^{B_0 + B_{\text{sex}} + B_{\text{Asian}} + B_{\text{Hispc}} + B_{\text{Black}} + B_{\text{Am. Ind.}} + B_{\text{Low ses}} + B_{\text{High ses}}},$$

where B_{Asian} , B_{Hispc} , and $B_{\text{Low ses}}$ and $B_{\text{High ses}}$ are dummy-coded variables with whites and middle SES as reference groups, respectively. The results of this model are

⁴⁶PCCARP is a descendent of the mainframe computer program SUPER CARP based on the work of Wayne Fuller and his colleagues at Iowa State University. PCCARP uses Taylor linearization methods for calculating sampling events for complex survey samples.

| Variable | B | S.E. | Wald statistic (t-test) | Sig. |
|-----------------------------|--------|--------|-------------------------|--------|
| Constant | -1.523 | 0.0459 | 33.17 | <0.001 |
| Sex | -0.256 | 0.0432 | 5.93 | <0.001 |
| Race | | | | |
| Asian vs. white | -0.170 | 0.1127 | 1.51 | >0.05 |
| Hispanic vs. white | 0.470 | 0.0695 | 6.77 | <0.001 |
| Black vs. white | 0.572 | 0.0653 | 8.76 | <0.001 |
| Native Am. vs. white | 0.705 | 0.1518 | 4.65 | <0.001 |
| SES | | | | |
| Low vs. middle | 0.519 | 0.0452 | 11.47 | <0.001 |
| High vs. middle | -0.707 | 0.0618 | 11.45 | <0.001 |

The adjusted odds ratio for the male vs. female comparison is now

$$\hat{\psi} = e^{-0.256} = 0.774$$

or in other words, adjusting for race and socioeconomic status, females are 33 percent less likely than males to perform below the basic proficiency level in mathematics.

Appendix B

**Sample Sizes,
Percentage Tables,
and Standard Error Tables**

Table B2.1—Sample sizes and standard errors for table 2.1

| Variable | Below basic mathematics | Below basic reading | Dropped out |
|------------------------|-------------------------|---------------------|-------------|
| Unweighted sample size | 21,908 | 22,676 | 17,424 |
| Total | 0.45 | 0.34 | 0.48 |
| Sex | | | |
| Male | 0.61 | 0.45 | 0.69 |
| Female | 0.51 | 0.41 | 0.59 |
| Race–ethnicity† | | | |
| Asian | 1.24 | 1.21 | 1.08 |
| Hispanic | 1.19 | 0.93 | 1.02 |
| Black | 1.14 | 1.01 | 1.95 |
| White | 0.47 | 0.31 | 0.52 |
| Native American | 3.30 | 4.22 | 2.83 |
| Socioeconomic status | | | |
| Low | 0.83 | 0.79 | 1.29 |
| Middle | 0.72 | 0.56 | 0.48 |
| High | 0.42 | 0.34 | 0.58 |

† Not shown separately are persons whose race–ethnicity is unknown (approximately 2 percent of the unweighted sample).

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988 (NELS:88), “Base Year and First Follow-Up” surveys.

Table B2.2—Standard errors for table 2.2

| Variable | Below basic mathematics | Below basic reading | Dropped out |
|-----------------------------|-------------------------|---------------------|-------------|
| Sex | | | |
| Female vs. male | 0.04 | 0.05 | 0.15 |
| Race–ethnicity† | | | |
| Asian vs. white | 0.11 | 0.10 | 0.41 |
| Hispanic vs. white | 0.07 | 0.06 | 0.17 |
| Black vs. white | 0.06 | 0.06 | 0.24 |
| Native American vs. white | 0.16 | 0.21 | 0.31 |
| Socioeconomic status | | | |
| Low vs. middle | 0.04 | 0.05 | 0.17 |
| High vs. middle | 0.06 | 0.07 | 0.42 |

† Not shown separately are persons whose race–ethnicity is unknown (approximately 2 percent of the unweighted sample).

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988 (NELS:88), “Base Year and First Follow-Up” surveys.

Table B2.3—Standard errors for table 2.3

| Variable | Below basic mathematics | Below basic reading | Dropped out |
|-----------------------------|-------------------------|---------------------|-------------|
| Sex | | | |
| Female vs. male | 0.04 | 0.05 | 0.16 |
| Race–ethnicity† | | | |
| Asian vs. white | 0.11 | 0.10 | 0.42 |
| Hispanic vs. white | 0.07 | 0.06 | 0.19 |
| Black vs. white | 0.07 | 0.07 | 0.30 |
| Native American vs. white | 0.15 | 0.20 | 0.29 |
| Socioeconomic status | | | |
| Low vs. middle | 0.05 | 0.05 | 0.18 |
| High vs. middle | 0.06 | 0.07 | 0.44 |

† Not shown separately are persons whose race–ethnicity is unknown (approximately 2 percent of the unweighted sample).

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988 (NELS:88), “Base Year and First Follow-Up” surveys.

Table B3.1—**Percentages** upon which the odds ratios of tables 3.1 and 3.2 are based

| Variable | Below basic mathematics | Below basic reading | Dropped out |
|----------------------------------|-------------------------|---------------------|-------------|
| Total | 18.0 | 12.9 | 5.6 |
| Student is overage for grade | | | |
| No | 14.9 | 10.2 | 2.3 |
| Yes | 33.4 | 26.5 | 21.2 |
| Family composition | | | |
| Two parents/guardians | 17.6 | 12.6 | 5.0 |
| Single parent | 26.1 | 18.4 | 14.7 |
| Family size | | | |
| 2–3 people | 20.1 | 13.2 | 8.5 |
| 4–5 people | 16.3 | 12.0 | 4.2 |
| 6–7 people | 20.7 | 14.8 | 6.1 |
| 8 or more people | 24.7 | 19.9 | 10.8 |
| Number of older sibling dropouts | | | |
| None | 16.9 | 12.2 | 4.5 |
| 1 | 23.2 | 16.3 | 10.5 |
| 2 | 26.9 | 17.2 | 14.5 |
| 3 or more | 28.1 | 22.5 | 16.3 |
| Changed schools | | | |
| Not at all | 16.6 | 11.2 | 2.8 |
| Once | 16.7 | 12.9 | 4.8 |
| Twice | 20.6 | 16.9 | 6.6 |
| Three times | 22.4 | 15.8 | 8.0 |
| Four times | 21.0 | 14.5 | 10.3 |
| Five+ times | 18.9 | 12.8 | 20.5 |

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988(NELS:88), "Base Year and First Follow-Up" surveys.

Table B3.2—Sample sizes and standard errors for table B3.1

| Variable | Below basic mathematics | Below basic reading | Dropped out |
|----------------------------------|-------------------------|---------------------|---------------|
| Unweighted sample size | 19,879 | 20,576 | 16,079 |
| Total | 0.45 | 0.33 | 0.49 |
| Student is overage for grade | | | |
| No | 0.42 | 0.30 | 0.41 |
| Yes | 1.03 | 0.90 | 1.73 |
| Family composition | | | |
| Two parents/guardians | 0.45 | 0.33 | 0.45 |
| Single parent | 1.60 | 1.27 | 3.66 |
| Family size | | | |
| 2–3 people | 0.80 | 0.66 | 1.59 |
| 4–5 people | 0.50 | 0.36 | 0.53 |
| 6–7 people | 0.89 | 0.73 | 0.74 |
| 8 or more people | 1.71 | 1.74 | 2.59 |
| Number of older sibling dropouts | | | |
| None | 0.45 | 0.32 | 0.53 |
| 1 | 1.14 | 0.98 | 1.08 |
| 2 | 1.87 | 1.69 | 3.09 |
| 3 or more | 2.74 | 3.12 | 3.17 |
| Changed schools | | | |
| Not at all | 0.59 | 0.44 | 0.30 |
| Once | 0.70 | 0.58 | 0.98 |
| Twice | 1.02 | 0.92 | 1.03 |
| Three times | 1.10 | 0.91 | 1.24 |
| Four times | 1.33 | 1.18 | 3.43 |
| Five+ times | 1.25 | 1.03 | 4.77 |

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988 (NELS:88), "Base Year and First Follow-Up" surveys.

Table B3.3—Standard errors for table 3.1

| Variable | Below basic mathematics | Below basic reading | Dropped out |
|---|-------------------------|---------------------|-------------|
| Student is overage for grade Yes vs. no | 0.05 | 0.05 | 0.20 |
| Family composition Single parent vs. two parents | 0.08 | 0.09 | 0.30 |
| Family size 4–5 people vs. 2–3 people | 0.06 | 0.06 | 0.24 |
| 6–7 people vs. 2–3 people | 0.07 | 0.08 | 0.24 |
| 8 or more people vs. 2–3 people | 0.10 | 0.12 | 0.34 |
| Number of older sibling dropouts 1 vs. none | 0.06 | 0.07 | 0.16 |
| 2 or more vs. none | 0.10 | 0.12 | 0.27 |
| Changed schools Once vs. not at all | 0.06 | 0.06 | 0.24 |
| Twice vs. not at all | 0.07 | 0.07 | 0.19 |
| Three times vs. not at all | 0.07 | 0.08 | 0.20 |
| Four times vs. not at all | 0.08 | 0.10 | 0.39 |
| Five+ times vs. not at all | 0.09 | 0.10 | 0.30 |

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988 (NELS:88), "Base Year and First Follow-Up" surveys.

Table B3.4—Standard errors for table 3.2

| Variable | Below basic mathematics | Below basic reading | Dropped out |
|--|-------------------------|---------------------|-------------|
| Student is overage for grade | | | |
| Yes vs. no | 0.06 | 0.06 | 0.26 |
| Family composition | | | |
| Single parent vs. two parents | 0.09 | 0.09 | 0.32 |
| Family size | | | |
| 4–5 people vs. 2–3 people | 0.06 | 0.06 | 0.25 |
| 6–7 people vs. 2–3 people | 0.07 | 0.08 | 0.25 |
| 8 or more people vs. 2–3 people | 0.11 | 0.12 | 0.36 |
| Number older sibling dropouts | | | |
| 1 vs. none | 0.06 | 0.07 | 0.16 |
| 2 or more vs. none | 0.10 | 0.13 | 0.27 |
| Changed schools | | | |
| Once vs. not at all | 0.06 | 0.06 | 0.23 |
| Twice vs. not at all | 0.07 | 0.08 | 0.20 |
| Three times vs. not at all | 0.07 | 0.08 | 0.20 |
| Four times vs. not at all | 0.09 | 0.11 | 0.43 |
| Five+ times vs. not at all | 0.09 | 0.10 | 0.30 |

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988 (NELS:88), "Base Year and First Follow-Up" surveys.

Table **B4.1—Percentages** upon which the odds ratios of tables **4.1** and **4.2** are based

| Variable | Below basic mathematics | Below basic reading | Dropped out |
|---|-------------------------|---------------------|-------------|
| Total | 18.0 | 12.9 | 5.6 |
| Parental involvement in PTA/school | | | |
| Low | 19.8 | 14.2 | 6.9 |
| Medium | 14.8 | 10.6 | 3.2 |
| High | 12.2 | 8.9 | 1.2 |
| Parent talks about school with student | | | |
| Not at all | 30.2 | 22.0 | 35.9 |
| Rarely | 24.5 | 18.7 | 11.1 |
| Occasionally | 20.5 | 15.6 | 7.6 |
| Regularly | 17.2 | 12.1 | 4.6 |
| Parent talks about high school plans with student | | | |
| Not at all | 25.2 | 16.5 | 19.6 |
| Rarely | 19.4 | 15.5 | 6.8 |
| Occasionally | 17.1 | 12.5 | 5.1 |
| Regularly | 18.4 | 12.8 | 5.2 |
| Parent talks about postsecondary education plans with student | | | |
| Not at all | 28.1 | 19.1 | 19.5 |
| Rarely | 19.9 | 15.3 | 7.8 |
| Occasionally | 16.8 | 12.5 | 4.3 |
| Regularly | 18.2 | 12.4 | 5.3 |
| Parent's educational expectations for student | | | |
| Less than HS diploma | 51.0 | 32.0 | 54.5 |
| GED/HS diploma | 28.8 | 15.1 | 60.2 |
| Vocational education | 30.3 | 22.1 | 12.1 |
| Some college | 21.4 | 16.0 | 6.9 |
| 4-year degree | 12.9 | 8.8 | 2.1 |
| Advanced degree | 8.4 | 6.3 | 1.1 |

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988 (NELS:88), "Base Year and First Follow-Up" surveys.

Table B4.2—Sample sizes and standard errors for table B4.1

| Variable | Below basic mathematics | Below basic reading | Dropped out |
|--|-------------------------|---------------------|---------------|
| Unweighted sample size | 19,879 | 20,576 | 16,079 |
| Total | 0.45 | 0.33 | 0.49 |
| Parental involvement in PTA/school | | | |
| Low | 0.54 | 0.39 | 0.66 |
| Medium | 0.67 | 0.52 | 0.80 |
| High | 0.93 | 0.81 | 0.35 |
| Parent talks about school with student | | | |
| Not at all | 4.38 | 4.00 | 11.67 |
| Rarely | 2.42 | 2.28 | 2.72 |
| Occasionally | 0.86 | 0.71 | 0.81 |
| Regularly | 0.47 | 0.34 | 0.54 |
| Parent talks about high school plans with student | | | |
| Not at all | 2.31 | 2.12 | 5.69 |
| Rarely | 1.19 | 1.10 | 1.23 |
| Occasionally | 0.54 | 0.42 | 0.82 |
| Regularly | 0.59 | 0.45 | 0.57 |
| Parent talks about postsecondary education plans with student | | | |
| Not at all | 1.93 | 1.66 | 3.86 |
| Rarely | 1.07 | 0.94 | 2.64 |
| Occasionally | 0.51 | 0.39 | 0.51 |
| Regularly | 0.62 | 0.47 | 0.71 |
| Parent's educational expectations for student | | | |
| Less than HS diploma | 5.86 | 5.26 | 6.51 |
| GED/HS diploma | 8.65 | 6.44 | 10.79 |
| Vocational education | 0.81 | 0.66 | 1.28 |
| Some college | 0.92 | 0.77 | 1.61 |
| 4-year degree | 0.51 | 0.39 | 0.50 |
| Advanced degree | 0.55 | 0.44 | 0.32 |

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988 (NELS:88), "Base Year and First Follow-Up" surveys.

Table B4.3—Standard errors for table 4.1

| Variable | Below basic mathematics | Below basic reading | Dropped out |
|---|-------------------------|---------------------|-------------|
| Parental involvement in PTA/school | | | |
| Low vs. medium | 0.06 | 0.06 | 0.28 |
| High vs. medium | 0.10 | 0.11 | 0.39 |
| Parent talks about school with student | | | |
| Not at all vs. regularly | 0.21 | 0.24 | 0.52 |
| Rarely vs. regularly | 0.13 | 0.15 | 0.30 |
| Occasionally vs. regularly | 0.05 | 0.06 | 0.16 |
| Parent talks about high school plans with student | | | |
| Not at all vs. regularly | 0.13 | 0.16 | 0.38 |
| Rarely vs. regularly | 0.08 | 0.09 | 0.23 |
| Occasionally vs. regularly | 0.05 | 0.05 | 0.20 |
| Parent talks about postsecondary education plans with student | | | |
| Not at all vs. regularly | 0.10 | 0.12 | 0.28 |
| Rarely vs. regularly | 0.07 | 0.08 | 0.39 |
| Occasionally vs. regularly | 0.04 | 0.05 | 0.19 |
| Parent's educational expectations for student | | | |
| Less than HS diploma vs. some college | 0.24 | 0.25 | 0.37 |
| GED/HS diploma vs. some college | 0.43 | 0.51 | 0.52 |
| Vocational education vs. some college | 0.06 | 0.06 | 0.28 |
| 4-year degree vs. some college | 0.07 | 0.07 | 0.35 |
| Advanced degree vs. some college | 0.09 | 0.09 | 0.34 |

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988 (NELS:88), "Base Year and First Follow-Up" surveys.

Table B4.4—Standard errors for table 4.2

| Variable | Below basic mathematics | Below basic reading | Dropped out |
|---|-------------------------|---------------------|-------------|
| Parental involvement in PTA/school | | | |
| Low vs. medium | 0.06 | 0.06 | 0.25 |
| High vs. medium | 0.10 | 0.11 | 0.42 |
| Parent talks about school with student | | | |
| Not at all vs. regularly | 0.23 | 0.26 | 0.46 |
| Rarely vs. regularly | 0.13 | 0.16 | 0.22 |
| Occasionally vs. regularly | 0.06 | 0.06 | 0.19 |
| Parent talks about high school plans with student | | | |
| Not at all vs. regularly | 0.13 | 0.16 | 0.70 |
| Rarely vs. regularly | 0.09 | 0.09 | 0.29 |
| Occasionally vs. regularly | 0.05 | 0.05 | 0.16 |
| Parent talks about postsecondary education plans with student | | | |
| Not at all vs. regularly | 0.10 | 0.12 | 0.32 |
| Rarely vs. regularly | 0.08 | 0.08 | 0.36 |
| Occasionally vs. regularly | 0.05 | 0.05 | 0.17 |
| Parent's educational expectations for student | | | |
| Less than HS diploma vs. some college | 0.26 | 0.26 | 0.38 |
| GED/HS diploma vs. some college | 0.42 | 0.54 | 0.50 |
| Vocational education vs. some college | 0.06 | 0.07 | 0.28 |
| 4-year degree vs. some college | 0.07 | 0.07 | 0.32 |
| Advanced degree vs. some college | 0.09 | 0.10 | 0.37 |

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988 (NELS:88), "Base Year and First Follow-Up" surveys.

Table B5.1—Percentages upon which the odds ratios of tables 5.1 and 5.2 are based

| Variable | Below basic mathematics | Below basic reading | Dropped out |
|---------------------------------|-------------------------|---------------------|-------------|
| Total | 18.0 | 12.9 | 5.6 |
| Repeated any grades K through 4 | | | |
| Yes | 33.3 | 26.7 | 14.3 |
| No | 15.7 | 10.8 | 4.2 |
| Repeated any grades 5 through 8 | | | |
| Yes | 33.8 | 26.1 | 18.5 |
| No | 14.4 | 9.9 | 2.5 |
| English grades since 6th grade | | | |
| Mostly As | 11.2 | 7.5 | 2.5 |
| Mostly Bs | 16.5 | 12.2 | 3.5 |
| Mostly Cs | 25.4 | 18.2 | 9.1 |
| Mostly Ds | 33.6 | 24.6 | 20.4 |
| Mostly below D | 42.0 | 31.1 | 13.1 |
| Math grades since 6th grade | | | |
| Mostly As | 10.1 | 9.2 | 2.6 |
| Mostly Bs | 16.0 | 11.9 | 4.0 |
| Mostly Cs | 25.8 | 16.3 | 7.1 |
| Mostly Ds | 36.1 | 21.8 | 19.1 |
| Mostly below D | 45.4 | 28.0 | 21.5 |
| Hours of homework per week | | | |
| None | 37.0 | 23.1 | 23.7 |
| .5 to < 3 hours | 20.6 | 14.5 | 6.1 |
| 3 to < 5.5 hours | 18.3 | 12.8 | 5.2 |
| 5.5 hours to < 10.5 hours | 14.3 | 12.1 | 4.2 |
| More than 10.5 hours | 12.1 | 8.5 | 2.8 |
| Has learning problem | | | |
| Yes | 40.9 | 32.2 | 14.3 |
| No | 16.4 | 11.6 | 5.0 |
| Has emotional problem | | | |
| Yes | 31.8 | 21.4 | 23.1 |
| No | 17.6 | 12.7 | 4.9 |
| In special education | | | |
| Yes | 51.2 | 40.5 | 12.0 |
| No | 16.6 | 11.8 | 5.3 |
| Attends remedial English | | | |
| Yes | 24.5 | 18.7 | 6.3 |
| No | 17.1 | 12.1 | 5.5 |

See footnote at end of table.

Table B5.1—Percentages upon which the odds ratios of tables 5.1 and 5.2 are based—Continued

| Variable | Below basic mathematics | Below basic reading | Dropped out |
|---------------------------------|-------------------------|---------------------|-------------|
| Mathematics class | | | |
| Remedial | 45.3 | 31.7 | 16.7 |
| Regular | 21.4 | 14.7 | 6.5 |
| Algebra | 9.9 | 8.3 | 3.1 |
| Student seen by others as: | | | |
| A very good student | 13.1 | 10.1 | 3.5 |
| A somewhat good student | 19.2 | 13.7 | 5.1 |
| Not at all a good student | 32.1 | 20.5 | 16.9 |
| How sure will graduate from HS: | | | |
| Very sure will graduate | 15.4 | 10.9 | 3.6 |
| Probably will graduate | 29.3 | 21.8 | 11.4 |
| Probably will not graduate | 50.5 | 37.0 | 53.0 |
| Postsecondary education plans | | | |
| Less than HS diploma | 53.6 | 36.6 | 44.2 |
| HS diploma only | 32.4 | 24.7 | 13.4 |
| Some college | 26.0 | 18.9 | 7.9 |
| 4-year college | 13.5 | 9.5 | 3.1 |
| Postcollege | 10.6 | 7.4 | 2.0 |

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988 (NELS:88), "Base Year and First Follow-Up" surveys.

Table B5.2—Sample sizes and standard errors for table B5.1

| Variable | Below basic mathematics | Below basic reading | Dropped out |
|---------------------------------|-------------------------|---------------------|---------------|
| Unweighted sample size | 19,879 | 20,576 | 16,079 |
| Total | 0.45 | 0.33 | 0.49 |
| Repeated any grades K through 4 | | | |
| Yes | 0.44 | 0.31 | 0.53 |
| No | 1.14 | 1.01 | 1.21 |
| Repeated any grades 5 through 8 | | | |
| Yes | 0.41 | 0.30 | 0.44 |
| No | 1.01 | 0.86 | 1.52 |
| English grades since 6th grade | | | |
| Mostly As | 0.55 | 0.38 | 0.41 |
| Mostly Bs | 0.55 | 0.45 | 0.38 |
| Mostly Cs | 0.88 | 0.69 | 1.26 |
| Mostly Ds | 1.70 | 1.63 | 4.61 |
| Mostly below D | 2.85 | 2.63 | 3.11 |
| Math grades since 6th grade | | | |
| Mostly As | 0.51 | 0.43 | 0.31 |
| Mostly Bs | 0.58 | 0.46 | 0.45 |
| Mostly Cs | 0.84 | 0.65 | 0.95 |
| Mostly Ds | 1.60 | 1.27 | 4.82 |
| Mostly below D | 2.68 | 2.40 | 5.70 |
| Hours of homework per week | | | |
| None | 2.24 | 1.97 | 4.83 |
| .5 to < 3 hours | 0.69 | 0.56 | 0.73 |
| 3 to < 5.5 hours | 0.63 | 0.48 | 0.86 |
| 5.5 hours to < 10.5 hours | 0.68 | 0.61 | 1.12 |
| More than 10.5 hours | 0.79 | 0.58 | 0.60 |
| Has learning problem | | | |
| Yes | 0.44 | 0.32 | 0.50 |
| No | 1.59 | 1.46 | 2.49 |
| Has emotional problem | | | |
| Yes | 0.45 | 0.33 | 0.44 |
| No | 2.01 | 1.73 | 5.51 |
| In special education | | | |
| Yes | 0.44 | 0.32 | 0.61 |
| No | 2.03 | 1.92 | 0.12 |
| Attends remedial English | | | |
| Yes | 1.08 | 0.94 | 0.81 |
| No | 0.45 | 0.32 | 0.54 |

See footnote at end of table.

Table B5.2—Standard errors for table B5.1—Continued

| Variable | Below basic mathematics | Below basic reading | Dropped out |
|---------------------------------|-------------------------|---------------------|-------------|
| Mathematics class | | | |
| Remedial | 2.49 | 2.15 | 3.31 |
| Regular | 0.55 | 0.42 | 0.69 |
| Algebra | 0.50 | 0.41 | 0.63 |
| Student seen by others as: | | | |
| A very good student | 0.57 | 0.47 | 0.64 |
| A somewhat good student | 0.53 | 0.40 | 0.44 |
| Not at all a good student | 1.32 | 1.16 | 3.52 |
| How sure will graduate from HS: | | | |
| Very sure will graduate | 0.43 | 0.31 | 0.41 |
| Probably will graduate | 0.99 | 0.88 | 1.84 |
| Probably will not graduate | 3.33 | 3.01 | 6.22 |
| Postsecondary education plans | | | |
| Less than HS diploma | 3.63 | 3.40 | 7.59 |
| HS diploma only | 1.25 | 1.07 | 1.18 |
| Some college | 0.78 | 0.71 | 0.94 |
| 4-year college | 0.47 | 0.35 | 0.81 |
| Postcollege | 0.59 | 0.49 | 0.45 |

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988 (NELS:88), "Base Year and First Follow-Up" surveys.

Table B5.3—Standard errors for table 5.1

| Variable | Below basic mathematics | Below basic reading | Dropped out |
|---|-------------------------|---------------------|-------------|
| Repeated any grades K through 4 Yes vs. no | 0.06 | 0.06 | 0.09 |
| Repeated any grades 5 through 8 Yes vs. no | 0.05 | 0.05 | 0.10 |
| English grades since 6th grade | | | |
| Mostly As vs. Cs | 0.07 | 0.07 | 0.23 |
| Mostly Bs vs. Cs | 0.06 | 0.06 | 0.19 |
| Mostly Ds vs. Cs | 0.08 | 0.10 | 0.31 |
| Mostly below D vs. Cs | 0.12 | 0.13 | 0.31 |
| Math grades since 6th grade | | | |
| Mostly As vs. Cs | 0.06 | 0.07 | 0.19 |
| Mostly Bs vs. Cs | 0.05 | 0.06 | 0.18 |
| Mostly Ds vs. Cs | 0.08 | 0.08 | 0.34 |
| Mostly below D vs. Cs | 0.12 | 0.13 | 0.37 |
| Hours of homework per week | | | |
| None vs. more than 10.5 hours | 0.12 | 0.13 | 0.34 |
| .5 to < 3 hours vs. more than 10.5 hours | 0.08 | 0.08 | 0.23 |
| 3 to < 5.5 hours vs. more than 10.5 hours | 0.08 | 0.08 | 0.28 |
| 5.5 to < 10.5 hours vs. more than 10.5 hours | 0.09 | 0.09 | 0.35 |
| Has learning problem | | | |
| Yes vs. no | 0.07 | 0.07 | 0.23 |
| Has emotional problem | | | |
| Yes vs. no | 0.09 | 0.10 | 0.32 |
| In special education | | | |
| Yes vs. no | 0.08 | 0.08 | 0.19 |
| Attends remedial English | | | |
| Yes vs. no | 0.06 | 0.06 | 0.17 |
| Mathematics class | | | |
| Remedial vs. regular | 0.10 | 0.10 | 0.27 |
| Algebra vs. regular | 0.06 | 0.06 | 0.24 |

See footnote at end of table.

Table B5.3—Standard errors for table 5.1—Continued

| Variable | Below basic mathematics | Below basic reading | Dropped out |
|---|-------------------------|---------------------|-------------|
| Student seen as by others as: | | | |
| A very good vs. a somewhat good student | 0.05 | 0.05 | 0.20 |
| Not at all a good student vs. a somewhat good student | 0.06 | 0.08 | 0.26 |
| How sure will graduate from HS: | | | |
| Very sure vs. probably sure | 0.05 | 0.06 | 0.22 |
| Probably will not vs. probably sure | 0.14 | 0.13 | 0.30 |
| Postsecondary education plans | | | |
| Less than HS diploma vs. HS diploma only | 0.16 | 0.16 | 0.33 |
| Some college vs. HS diploma only | 0.07 | 0.07 | 0.17 |
| 4-year college vs. HS diploma only | 0.07 | 0.07 | 0.29 |
| Postcollege vs. HS diploma only | 0.08 | 0.09 | 0.25 |

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988 (NELS:88), "Base Year and First Follow-Up" surveys.

Table B5.4—Standard errors for table 5.2

| Variable | Below basic mathematics | Below basic reading | Dropped out |
|--|-------------------------|---------------------|-------------|
| Repeated any grades K through 4 | | | |
| Yes vs. no | 0.06 | 0.06 | 0.17 |
| Repeated any grades 5 through 8 | | | |
| Yes vs. no | 0.06 | 0.06 | 0.25 |
| English grades since 6th grade | | | |
| Mostly As vs.Cs | 0.07 | 0.07 | 0.26 |
| Mostly Bs vs.Cs | 0.06 | 0.06 | 0.21 |
| Mostly Ds vs.Cs | 0.09 | 0.10 | 0.32 |
| Mostly below D vs.Cs | 0.13 | 0.13 | 0.29 |
| Math grades since 6th grade | | | |
| Mostly As vs.Cs | 0.07 | 0.07 | 0.19 |
| Mostly Bs vs.Cs | 0.05 | 0.06 | 0.18 |
| Mostly Ds vs.Cs | 0.08 | 0.09 | 0.35 |
| Mostly below D vs.Cs | 0.12 | 0.13 | 0.43 |
| Hours of homework per week | | | |
| None vs. more than 10.5 hours | 0.13 | 0.14 | 0.41 |
| .5 to < 3 hours vs. more than 10.5 hours | 0.08 | 0.08 | 0.23 |
| 3 to < 5.5 hours vs. more than 10.5 hours | 0.08 | 0.08 | 0.28 |
| 5.5 to < 10.5 hours vs. more than 10.5 hours | 0.09 | 0.09 | 0.36 |
| Has learning problem | | | |
| Yes vs. no | 0.07 | 0.08 | 0.25 |
| Has emotional problem | | | |
| Yes vs. no | 0.10 | 0.11 | 0.39 |
| In special education | | | |
| Yes vs. no | 0.09 | 0.09 | 0.19 |
| Attends remedial English | | | |
| Yes vs. no | 0.06 | 0.06 | 0.18 |
| Mathematics class | | | |
| Remedial vs. regular | 0.11 | 0.11 | 0.27 |
| Algebra vs. regular | 0.06 | 0.06 | 0.22 |

See footnote at end of table.

Table B5.4—Standard errors for table 5.2—Continued

| Variable | Below basic mathematics | Below basic reading | Dropped out |
|--|-------------------------|---------------------|-------------|
| Student seen by others as: | | | |
| A very good vs. a somewhat good student | 0.05 | 0.06 | 0.22 |
| Not at all a good student vs. a somewhat good student | 0.07 | 0.08 | 0.26 |
| How sure will graduate from HS: | | | |
| Very sure vs. probably sure | 0.05 | 0.06 | 0.20 |
| Probably will not vs. probably sure | 0.14 | 0.14 | 0.39 |
| Postsecondary education plans | | | |
| Less than HS diploma vs. HS diploma only | 0.16 | 0.16 | 0.41 |
| Some college vs. HS diploma only | 0.07 | 0.08 | 0.17 |
| 4-year college vs. HS diploma only | 0.07 | 0.07 | 0.33 |
| Postcollege vs. HS diploma only | 0.09 | 0.10 | 0.30 |

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988 (NELS:88), "Base Year and First Follow-Up" surveys.

Table B6.1—Percentages upon which the odds ratios of tables 6.1 and 6.2 are based

| Variable | Below basic mathematics | Below basic reading | Dropped out |
|------------------------|-------------------------|---------------------|-------------|
| Total | 18.0 | 12.9 | 5.6 |
| Comes w/o pencil/paper | | | |
| Usually | 34.7 | 25.2 | 14.9 |
| Often | 22.2 | 17.1 | 5.5 |
| Seldom | 14.9 | 9.8 | 4.8 |
| Never | 16.5 | 12.5 | 4.1 |
| Comes w/o books | | | |
| Usually | 43.1 | 31.4 | 16.3 |
| Often | 31.1 | 22.6 | 10.1 |
| Seldom | 14.7 | 9.7 | 5.2 |
| Never | 15.6 | 11.6 | 4.0 |
| Comes w/o homework | | | |
| Usually | 32.9 | 24.2 | 13.2 |
| Often | 23.2 | 15.6 | 9.1 |
| Seldom | 14.5 | 9.8 | 4.4 |
| Never | 14.9 | 11.7 | 2.8 |
| Comes unprepared | | | |
| Usually | 45.1 | 34.8 | 21.4 |
| Often | 28.5 | 19.9 | 9.8 |
| Seldom | 16.1 | 10.9 | 5.3 |
| Never | 15.1 | 11.9 | 2.8 |
| Days missed last month | | | |
| None | 16.2 | 12.1 | 3.4 |
| 1–2 | 16.9 | 12.0 | 4.2 |
| 3–4 | 22.3 | 15.5 | 9.4 |
| 5 or more | 27.2 | 17.6 | 1.8 |
| How often cuts class | | | |
| Seldom/never | 16.7 | 12.2 | 4.8 |
| Less than once/wk | 28.7 | 18.4 | 10.9 |
| Once/wk or more | 42.1 | 28.2 | 24.4 |
| Smoking habits | | | |
| Does not smoke | 17.1 | 12.5 | 4.3 |
| Smokes | 31.0 | 19.3 | 25.3 |

See footnote at end of table.

Table B6.1—**Percentages** upon which the odds ratios of tables 6.1 and 6.2 are based—Continued

| Variable | Below basic mathematics | Below basic reading | Dropped out |
|--------------------------------|-------------------------|---------------------|-------------|
| Days tardy last month | | | |
| None | 15.9 | 11.5 | 3.9 |
| 1 or 2 | 19.7 | 14.2 | 6.5 |
| 3 or 4 | 23.5 | 16.8 | 7.6 |
| 5 to 9 | 31.2 | 19.5 | 20.9 |
| 10 or more | 38.2 | 28.1 | 22.1 |
| Sent to office for misbehaving | | | |
| Never | 13.7 | 10.1 | 2.7 |
| Once or twice | 24.7 | 17.8 | 9.4 |
| More than twice | 34.3 | 22.4 | 17.3 |

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988 (NELS:88), “Base Year and First Follow-Up” surveys.

Table B6.2—Sample sizes and standard errors for table B6.1

| Variable | Below basic mathematics | Below basic reading | Dropped out |
|-------------------------------|-------------------------|---------------------|-------------|
| Unweighted sample size | 19,879 | 20,576 | 16,079 |
| Total | 0.45 | 0.33 | 0.49 |
| Comes w/o pencil/paper | | | |
| usually | 1.49 | 1.24 | 3.36 |
| Often | 0.95 | 0.88 | 0.68 |
| Seldom | 0.48 | 0.34 | 0.62 |
| Never | 0.61 | 0.52 | 0.42 |
| Comes without books | | | |
| Usually | 2.18 | 2.00 | 4.30 |
| Often | 1.68 | 1.42 | 1.70 |
| Seldom | 0.56 | 0.40 | 0.88 |
| Never | 0.49 | 0.43 | 0.52 |
| Comes without homework | | | |
| Usually | 1.51 | 1.31 | 2.51 |
| Often | 0.99 | 0.83 | 2.15 |
| Seldom | 0.49 | 0.37 | 0.59 |
| Never | 0.66 | 0.59 | 0.43 |
| Comes unprepared | | | |
| Usually | 2.37 | 2.28 | 5.21 |
| Often | 1.23 | 1.02 | 2.33 |
| Seldom | 0.49 | 0.36 | 0.57 |
| Never | 0.56 | 0.49 | 0.38 |
| Days missed last month | | | |
| None | 0.53 | 0.42 | 0.69 |
| 1–2 | 0.58 | 0.51 | 0.46 |
| 3–4 | 1.08 | 0.83 | 1.69 |
| 5 or more | 1.33 | 1.12 | 2.69 |
| How often cuts class | | | |
| Seldom/never | 0.43 | 0.32 | 0.48 |
| Less than once/wk | 1.58 | 1.18 | 1.75 |
| Once/wk or more | 2.86 | 2.51 | 6.49 |
| Smoking habits | | | |
| Does not smoke | 0.44 | 0.33 | 0.46 |
| Smokes | 1.56 | 1.25 | 2.86 |

See footnote at end of table.

Table **B6.2—Standard** errors for table **B6.1—Continued**

| Variable | Below basic mathematics | Below basic reading | Dropped out |
|---------------------------------------|-------------------------|---------------------|-------------|
| Days tardy last month | | | |
| None | 0.45 | 0.36 | 0.51 |
| 1 or 2 | 0.77 | 0.57 | 0.69 |
| 3 or 4 | 1.43 | 1.19 | 1.28 |
| 5 to 9 | 2.48 | 2.11 | 7.53 |
| 10 or more | 3.06 | 2.73 | 8.68 |
| Sent to office for misbehaving | | | |
| Never | 0.41 | 0.33 | 0.25 |
| Once or twice | 0.83 | 0.69 | 1.59 |
| More than twice | 1.36 | 1.11 | 2.35 |

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988 (NELS:88), "Base Year and First Follow-Up" surveys.

Table B6.3—Standard errors for table 6.1

| Variable | Below basic mathematics | Below basic reading | Dropped out |
|--------------------------------|-------------------------|---------------------|-------------|
| Comes without pencil/paper | | | |
| Usually vs. never | 0.07 | 0.08 | 0.27 |
| Often vs. never | 0.07 | 0.07 | 0.16 |
| Seldom vs. never | 0.05 | 0.06 | 0.17 |
| Comes without books | | | |
| Usually vs. never | 0.09 | 0.10 | 0.16 |
| Often vs. never | 0.08 | 0.09 | 0.15 |
| Seldom vs. never | 0.05 | 0.06 | 0.11 |
| Comes without homework | | | |
| Usually vs. never | 0.07 | 0.09 | 0.16 |
| Often vs. never | 0.07 | 0.08 | 0.16 |
| Seldom vs. never | 0.06 | 0.07 | 0.13 |
| Comes unprepared | | | |
| Usually vs. never | 0.10 | 0.11 | 0.34 |
| Often vs. never | 0.07 | 0.08 | 0.30 |
| Seldom vs. never | 0.05 | 0.05 | 0.18 |
| Days missed last month | | | |
| 1–2 vs. none | 0.05 | 0.06 | 0.23 |
| 3–4 vs. none | 0.07 | 0.07 | 0.28 |
| 5 or more vs. none | 0.07 | 0.08 | 0.28 |
| How often cuts class | | | |
| Less than once/wk vs. never | 0.08 | 0.08 | 0.20 |
| Once/wk or more vs. never | 0.12 | 0.12 | 0.37 |
| Smoking habits | | | |
| Does not smoke vs. smokes | 0.07 | 0.08 | 0.18 |
| Days tardy last month | | | |
| 1–2 vs. none | 0.05 | 0.06 | 0.17 |
| 3–4 vs. none | 0.08 | 0.09 | 0.21 |
| 5–10 vs. none | 0.12 | 0.14 | 0.47 |
| 10 or more vs. none | 0.13 | 0.14 | 0.52 |
| Sent to office for misbehaving | | | |
| Once or twice vs. never | 0.05 | 0.05 | 0.20 |
| More than twice vs. never | 0.06 | 0.07 | 0.18 |

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988 (NELS:88), "Base Year and First Follow-Up" surveys.

Table B6.4—Standard errors for table 6.2

| Variable | Below basic mathematics | Below basic reading | Dropped out |
|--------------------------------|-------------------------|---------------------|-------------|
| Comes without pencil/paper | | | |
| Usually vs. never | 0.07 | 0.08 | 0.27 |
| Often vs. never | 0.07 | 0.07 | 0.18 |
| Seldom vs. never | 0.05 | 0.06 | 0.18 |
| Comes without books | | | |
| Usually vs. never | 0.09 | 0.10 | 0.17 |
| Often vs. never | 0.09 | 0.09 | 0.16 |
| Seldom vs. never | 0.05 | 0.06 | 0.11 |
| Comes without homework | | | |
| Usually vs. never | 0.08 | 0.09 | 0.17 |
| Often vs. never | 0.07 | 0.08 | 0.16 |
| Seldom vs. never | 0.06 | 0.07 | 0.13 |
| Comes unprepared | | | |
| Usually vs. never | 0.10 | 0.12 | 0.39 |
| Often vs. never | 0.07 | 0.08 | 0.28 |
| Seldom vs. never | 0.05 | 0.06 | 0.18 |
| Days missed last month | | | |
| 1–2 vs. none | 0.05 | 0.06 | 0.23 |
| 3–4 vs. none | 0.07 | 0.07 | 0.28 |
| 5 or more vs. none | 0.07 | 0.09 | 0.31 |
| How often cuts class | | | |
| Less than once/wk vs. never | 0.08 | 0.08 | 0.22 |
| Once/wk or more vs. never | 0.13 | 0.13 | 0.45 |
| Smoking habits | | | |
| Does not smoke vs. smokes | 0.08 | 0.09 | 0.24 |
| Days tardy last month | | | |
| 1–2 vs. none | 0.05 | 0.06 | 0.17 |
| 3–4 vs. none | 0.08 | 0.08 | 0.22 |
| 5–10 vs. none | 0.12 | 0.16 | 0.56 |
| 10 or more vs. none | 0.14 | 0.15 | 0.66 |
| Sent to office for misbehaving | | | |
| Once or twice vs. never | 0.05 | 0.06 | 0.22 |
| More than twice vs. never | 0.07 | 0.08 | 0.21 |

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988 (NELS:88), "Base Year and First Follow-Up" surveys.

Table B7.1—Percentages upon which the odds ratios of tables 7.1 and 7.2 are based

| Variable | Below basic mathematics | Below basic reading | Dropped out |
|-----------------------------------|-------------------------|---------------------|-------------|
| Total | 18.0 | 12.9 | 5.6 |
| Student is passive | | | |
| Yes | 25.9 | 18.2 | 10.5 |
| No | 17.4 | 12.5 | 5.1 |
| Student is frequently disruptive | | | |
| Yes | 30.5 | 20.9 | 12.2 |
| No | 16.2 | 11.8 | 4.6 |
| Student is inattentive | | | |
| Yes | 32.0 | 21.3 | 12.6 |
| No | 14.5 | 10.8 | 3.7 |
| Student performs below ability | | | |
| Yes | 31.0 | 20.6 | 11.8 |
| No | 13.5 | 10.3 | 3.4 |
| Student rarely completes homework | | | |
| Yes | 33.5 | 22.2 | 14.0 |
| No | 14.3 | 10.7 | 3.4 |
| Student is frequently tardy | | | |
| Yes | 37.0 | 25.1 | 21.5 |
| No | 17.0 | 12.3 | 4.7 |
| Student is frequently absent | | | |
| Yes | 27.4 | 18.6 | 20.1 |
| No | 16.9 | 12.3 | 3.7 |

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988 (NELS:88), "Base Year and First Follow-Up" surveys.

Table **B7.2—Sample** sizes and standard errors for table **B7.1**

| Variable | Below basic mathematics | Below basic reading | Dropped out |
|-----------------------------------|-------------------------|---------------------|-------------|
| Unweighted sample size | 19,879 | 20,576 | 16,079 |
| Total | 0.45 | 0.33 | 0.49 |
| Student is passive | | | |
| Yes | 0.45 | 0.33 | 0.50 |
| No | 1.42 | 1.26 | 2.14 |
| Student is frequently disruptive | | | |
| Yes | 0.42 | 0.34 | 0.40 |
| No | 1.31 | 0.97 | 2.37 |
| Student is inattentive | | | |
| Yes | 0.40 | 0.32 | 0.37 |
| No | 1.02 | 0.77 | 1.67 |
| Student performs below ability | | | |
| Yes | 0.40 | 0.32 | 0.39 |
| No | 0.89 | 0.66 | 1.42 |
| Student rarely completes homework | | | |
| Yes | 0.40 | 0.32 | 0.36 |
| No | 1.02 | 0.75 | 1.71 |
| Student is frequently tardy | | | |
| Yes | 0.44 | 0.32 | 0.45 |
| No | 1.91 | 1.58 | 3.87 |
| Student is frequently absent | | | |
| Yes | 0.45 | 0.33 | 0.42 |
| No | 1.25 | 0.97 | 2.52 |

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988 (NELS:88), "Base Year and First Follow-Up" surveys.

Table B7.3—Standard errors for table 7.1

| Variable | Below basic mathematics | Below basic reading | Dropped out |
|---|-------------------------|---------------------|-------------|
| Student is passive Yes vs. no | 0.07 | 0.09 | 0.12 |
| Student is frequently disruptive Yes vs. no | 0.06 | 0.07 | 0.17 |
| Student is inattentive Yes vs. no | 0.05 | 0.05 | 0.09 |
| Student performs below ability Yes vs. no | 0.04 | 0.05 | 0.09 |
| Student rarely completes homework Yes vs. no | 0.05 | 0.05 | 0.09 |
| Student is frequently tardy Yes vs. no | 0.08 | 0.09 | 0.14 |
| Student is frequently absent Yes vs. no | 0.06 | 0.07 | 0.10 |

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988 (NELS:88), "Base Year and First Follow-Up" surveys.

Table B7.4—Standard errors for table 7.2

| Variable | Below basic mathematics | Below basic reading | Dropped out |
|---|-------------------------|---------------------|-------------|
| Student is passive Yes vs. no | 0.07 | 0.09 | 0.28 |
| Student is frequently disruptive Yes vs. no | 0.06 | 0.07 | 0.23 |
| Student is inattentive Yes vs. no | 0.05 | 0.06 | 0.17 |
| Student performs below ability Yes vs. no | 0.05 | 0.05 | 0.17 |
| Student rarely completes homework Yes vs. no | 0.05 | 0.05 | 0.17 |
| Student is frequently tardy Yes vs. no | 0.08 | 0.09 | 0.28 |
| Student is frequently absent Yes vs. no | 0.07 | 0.07 | 0.21 |

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988 (NELS:88), "Base Year and First Follow-Up" surveys.

Table B8.1—Percentages upon which the odds ratios of tables 8.1 and 8.2 are based

| Variable | Below basic mathematics | Below basic reading | Dropped out |
|--|-------------------------|---------------------|-------------|
| Total | 18.0 | 12.9 | 5.6 |
| School size | | | |
| 1–399 | 15.6 | 11.4 | 5.0 |
| 400–599 | 18.6 | 13.2 | 5.2 |
| 600–799 | 19.3 | 13.1 | 4.8 |
| 800–1,199 | 18.1 | 13.0 | 7.1 |
| 1,200+ | 20.0 | 16.0 | 6.2 |
| School urbanicity | | | |
| Urban | 20.1 | 15.7 | 6.9 |
| Suburban | 16.8 | 11.8 | 4.4 |
| Rural | 18.1 | 12.4 | 6.2 |
| Percent minority in school | | | |
| 0–5 | 14.2 | 10.6 | 3.3 |
| 6–20 | 16.1 | 9.8 | 6.1 |
| 21–40 | 18.1 | 13.3 | 5.5 |
| 41–60 | 22.9 | 16.0 | 5.2 |
| 61 or more | 28.2 | 22.2 | 10.7 |
| Percent on free or reduced price lunch program | | | |
| None | 12.0 | 8.6 | 2.0 |
| 1–10 vs. O | 13.9 | 9.8 | 5.5 |
| 11–30 vs. O | 17.5 | 12.5 | 4.9 |
| 31–74 vs. O | 23.5 | 16.4 | 7.1 |
| 75+ vs. O | 31.6 | 25.7 | 12.9 |
| School problems | | | |
| Low | 9.2 | 7.5 | 0.5 |
| Moderate | 16.5 | 12.0 | 4.7 |
| High | 22.8 | 16.0 | 8.2 |
| Teacher engagement | | | |
| Low | 20.3 | 14.8 | 5.9 |
| Moderate | 17.6 | 12.7 | 5.6 |
| High | 14.4 | 9.4 | 4.4 |
| Academic press | | | |
| Low | 21.8 | 15.7 | 7.2 |
| Moderate | 19.0 | 13.1 | 6.0 |
| High | 13.3 | 10.4 | 3.3 |
| School security | | | |
| Low | 14.0 | 9.1 | 2.6 |
| Moderate | 17.4 | 12.5 | 5.8 |
| High | 19.2 | 14.0 | 6.1 |

See footnote at end of table.

Table **B8.1—Percentages** upon which the odds ratios of tables **8.1** and **8.2** are based—Continued

| Variable | Below basic mathematics | Below basic reading | Dropped out |
|--|-------------------------|---------------------|-------------|
| School discipline | | | |
| Low | 19.8 | 14.7 | 6.3 |
| Moderate | 17.8 | 12.6 | 5.9 |
| High | 16.7 | 11.8 | 3.9 |
| School reading level | | | |
| Low | 29.3 | 21.2 | 8.2 |
| Moderate | 14.8 | 10.6 | 5.1 |
| High | 6.4 | 4.5 | 2.0 |
| School math level | | | |
| Low | 30.9 | 20.6 | 9.6 |
| Moderate | 14.9 | 11.0 | 4.8 |
| High | 7.0 | 6.7 | 1.6 |
| School combined math and reading level | | | |
| Low | 30.1 | 20.8 | 9.5 |
| Moderate | 14.8 | 10.8 | 4.6 |
| High | 6.5 | 5.6 | 1.7 |

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988 (NELS:88), "Base Year and First Follow-Up" surveys.

Table **B8.2—Sample** sizes and standard errors for table **B8.1**

| Variable | Below basic mathematics | Below basic reading | Dropped out |
|--|-------------------------|---------------------|---------------|
| Unweighted sample size | 19,879 | 20,576 | 16,079 |
| Total | 0.45 | 0.33 | 0.49 |
| School size | | | |
| 1–399 | 0.91 | 0.64 | 1.26 |
| 400–599 | 0.83 | 0.67 | 0.80 |
| 600–799 | 1.01 | 0.75 | 0.66 |
| 800–1,199 | 1.08 | 0.65 | 1.25 |
| 1,200+ | 1.58 | 1.46 | 1.76 |
| School urbanicity | | | |
| Urban | 0.94 | 0.71 | 1.04 |
| Suburban | 0.61 | 0.49 | 0.64 |
| Rural | 0.89 | 0.55 | 0.98 |
| Percent minority in school | | | |
| 0–5 | 0.67 | 0.44 | 0.38 |
| 6–20 | 0.88 | 0.57 | 1.52 |
| 21–40 | 1.05 | 0.75 | 0.72 |
| 41–60 | 1.42 | 0.95 | 0.81 |
| 61 or more | 1.29 | 1.08 | 1.64 |
| Percent on free or reduced price lunch program | | | |
| None | 1.03 | 0.74 | 0.67 |
| 1–lo vs. 0 | 0.71 | 0.55 | 1.28 |
| 11–30 vs. 0 | 0.72 | 0.53 | 0.46 |
| 31–74 vs. 0 | 1.08 | 0.73 | 1.22 |
| 75+ vs. 0 | 2.12 | 1.97 | 2.64 |
| School problems | | | |
| Low | 1.53 | 1.19 | 0.28 |
| Moderate | 0.50 | 0.39 | 0.54 |
| High | 1.01 | 6.60 | 1.13 |
| Teacher engagement | | | |
| Low | 0.90 | 0.68 | 0.67 |
| Moderate | 0.58 | 0.41 | 0.60 |
| High | 1.39 | 0.88 | 2.71 |
| Academic press | | | |
| Low | 1.00 | 0.82 | 0.82 |
| Moderate | 0.64 | 0.45 | 0.86 |
| High | 0.77 | 0.55 | 0.60 |

See footnote at end of table.

Table B8.2—Standard errors for table B8.1—Continued

| Variable | Below basic mathematics | Below basic reading | Dropped out |
|--|-------------------------|---------------------|-------------|
| School security | | | |
| Low | 1.14 | 0.71 | 0.67 |
| Moderate | 0.77 | 0.61 | 1.16 |
| High | 0.64 | 0.45 | 0.60 |
| School discipline | | | |
| Low | 0.99 | 0.79 | 0.78 |
| Moderate | 0.59 | 0.40 | 0.77 |
| High | 1.02 | 0.74 | 0.75 |
| School reading level | | | |
| Low | 0.83 | 0.65 | 0.79 |
| Moderate | 0.47 | 0.32 | 0.75 |
| High | 0.46 | 0.37 | 0.92 |
| School math level | | | |
| Low | 0.83 | 0.68 | 0.96 |
| Moderate | 0.44 | 0.36 | 0.78 |
| High | 0.47 | 0.43 | 0.36 |
| School combined math and reading level | | | |
| Low | 0.81 | 0.66 | 0.93 |
| Moderate | 0.45 | 0.34 | 0.72 |
| High | 0.46 | 0.39 | 0.77 |

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988 (NELS:88), "Base Year and First Follow-Up" surveys.

Table B8.3—Standard errors for table 8.1

| Variable | Below basic mathematics | Below basic reading | Dropped out |
|--|-------------------------|---------------------|-------------|
| School size | | | |
| 1–399 vs. 600–799 | 0.10 | 0.09 | 0.30 |
| 400–599 vs. 600–799 | 0.09 | 0.09 | 0.22 |
| 800–1,199 vs. 600–799 | 0.10 | 0.09 | 0.24 |
| 1,200+ vs. 600–799 | 0.12 | 0.13 | 0.34 |
| School urbanicity | | | |
| Urban vs. suburban | 0.07 | 0.07 | 0.23 |
| Rural vs. suburban | 0.07 | 0.07 | 0.23 |
| Percent minority in school | | | |
| 6–20 vs. 0–5 | 0.09 | 0.08 | 0.29 |
| 21–40 vs. 0–5 | 0.09 | 0.08 | 0.19 |
| 41–60 vs. 0–5 | 0.10 | 0.09 | 0.20 |
| 61+ vs. 0–5 | 0.08 | 0.08 | 0.21 |
| Percent on free or reduced price lunch program | | | |
| 1–lo vs. 0 | 0.11 | 0.11 | 0.43 |
| 11–30 vs. 0 | 0.11 | 0.11 | 0.36 |
| 31–74 vs. 0 | 0.11 | 0.11 | 0.39 |
| 75+ vs. 0 | 0.14 | 0.14 | 0.42 |
| School problems | | | |
| Low vs. moderate | 0.19 | 0.18 | 0.57 |
| High vs. moderate | 0.07 | 0.06 | 0.19 |
| Teacher engagement | | | |
| Low vs. moderate | 0.07 | 0.07 | 0.17 |
| High vs. moderate | 0.12 | 0.11 | 0.66 |
| Academic press | | | |
| Low vs. moderate | 0.07 | 0.07 | 0.20 |
| High vs. moderate | 0.08 | 0.07 | 0.24 |
| School security | | | |
| Low vs. moderate | 0.11 | 0.10 | 0.35 |
| High vs. moderate | 0.07 | 0.07 | 0.24 |

See footnote at end of table.

Table B8.3—Standard errors for table 8.1—Continued

| Variable | Below basic mathematics | Below basic reading | Dropped out |
|--|-------------------------|---------------------|-------------|
| School discipline | | | |
| Low vs. moderate | 0.07 | 0.07 | 0.19 |
| High vs. moderate | 0.08 | 0.08 | 0.25 |
| School reading level | | | |
| Low vs. moderate | 0.05 | 0.05 | 0.19 |
| High vs. moderate | 0.08 | 0.09 | 0.50 |
| School math level | | | |
| Low vs. moderate | 0.05 | 0.06 | 0.20 |
| High vs. moderate | 0.08 | 0.08 | 0.29 |
| School combined math and reading level | | | |
| Low vs. moderate | 0.05 | 0.05 | 0.20 |
| High vs. moderate | 0.08 | 0.08 | 0.50 |

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988 (NELS:88), "Base Year and First Follow-Up" surveys.

Table B8.4—Standard errors for table 8.2

| Variable | Below basic mathematics | Below basic reading | Dropped out |
|--|-------------------------|---------------------|-------------|
| School size | | | |
| 1–399 vs. 600–799 | 0.09 | 0.08 | 0.27 |
| 400–599 vs. 600–799 | 0.08 | 0.08 | 0.22 |
| 800–1,199 vs. 600–799 | 0.09 | 0.08 | 0.24 |
| 1,200+ vs. 600–799 | 0.10 | 0.10 | 0.34 |
| School urbanicity | | | |
| Urban vs. suburban | 0.07 | 0.06 | 0.22 |
| Rural vs. suburban | 0.07 | 0.07 | 0.21 |
| Percent minority in school | | | |
| 6–20 vs. 0–5 | 0.08 | 0.08 | 0.29 |
| 21–40 vs. 0–5 | 0.09 | 0.08 | 0.20 |
| 41–60 vs. 0–5 | 0.10 | 0.09 | 0.24 |
| 61+ vs. 0–5 | 0.10 | 0.09 | 0.27 |
| Percent on free or reduced price lunch program | | | |
| 1–lo vs. 0 | 0.11 | 0.11 | 0.43 |
| 11–30 vs. 0 | 0.10 | 0.10 | 0.36 |
| 31–74 vs. 0 | 0.12 | 0.11 | 0.39 |
| 75+ vs. 0 | 0.14 | 0.13 | 0.44 |
| School problems | | | |
| Low vs. moderate | 0.19 | 0.17 | 0.55 |
| High vs. moderate | 0.06 | 0.06 | 0.19 |
| Teacher engagement | | | |
| Low vs. moderate | 0.06 | 0.06 | 0.16 |
| High vs. moderate | 0.10 | 0.10 | 0.62 |
| Academic press | | | |
| Low vs. moderate | 0.07 | 0.07 | 0.19 |
| High vs. moderate | 0.07 | 0.07 | 0.24 |
| School security | | | |
| Low vs. moderate | 0.10 | 0.09 | 0.33 |
| High vs. moderate | 0.06 | 0.06 | 0.23 |

See footnote at end of table.

Table B8.4—Standard errors for table 8.2—Continued

| Variable | Below basic mathematics | Below basic reading | Dropped out |
|--|-------------------------|---------------------|-------------|
| School discipline | | | |
| Low vs. moderate | 0.07 | 0.07 | 0.19 |
| High vs. moderate | 0.08 | 0.07 | 0.25 |
| School reading level | | | |
| Low vs. moderate | 0.06 | 0.06 | 0.20 |
| High vs. moderate | 0.09 | 0.10 | 0.53 |
| School math level | | | |
| Low vs. moderate | 0.06 | 0.06 | 0.21 |
| High vs. moderate | 0.09 | 0.08 | 0.29 |
| School combined math and reading level | | | |
| Low vs. moderate | 0.06 | 0.06 | 0.20 |
| High vs. moderate | 0.09 | 0.09 | 0.54 |

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study of 1988 (NELS:88), "Base Year and First Follow-Up" surveys.

